NEW ZEALAND INSTITUTE FOR THE STUDY
OF COMPETITION AND REGULATION INC.

OPTIMAL JUDICIAL SENTENCING AND THE FAIR TRADING ACT

A study of the size of penalties awarded under section 40 of the New Zealand Fair Trading Act 1986

Jaimie Legge

A study jointly supported by the Commerce Commission and The New Zealand Institute for the Study of Competition and Regulation

Appendices to the Paper can be Obtained from iscr@vuw.ac.nz

Alan Bollard, the then chairman of the **Commerce Commission** (CC), initiated the study in December 1997.

In August 1998 a joint funding agreement to complete the study was entered into between the Commission and the **New Zealand Institute for the Study of Competition and Regulation** (ISCR).

The study was substantially completed in November 1999.

Jaimie Legge was employed by the Commission and the Institute to undertake the study. At the start of the study Jaimie had completed her fourth year of a combined law and economics degree (LLB/BCA) at Victoria University of Wellington. She completed both degrees in 1998, and a BCA(Hons) degree in economics in 1999.

Acknowledgments. The following people, in particular, were of assistance in the production of this paper. Lew Evans (Director, ISCR) provided considerable direction and econometric advice for the study. Mike Chapman (Manager Legal, CC) and Michael Pickford (Chief Economist, CC) provided general support and advice on Commerce Commission-related matters. Rachael Leamy (Manager Fair Trading, CC) and Estelle Le Lievre provided advice on the Commission's Fair Trading Act screening and enforcement procedure. Carolyn Taylor (Librarian, CC) provided support in searching and locating material. Finally, Conal Smith and Margaret Smith provided valuable comments and editing.

Disclaimer. The views expressed in this paper represent the views of the author, and do not necessarily represent the views of the Commerce Commission nor of the New Zealand Institute for the Study of Competition and Regulation.

Abstract

The purpose of this study is to investigate the determinants of the size of penalties awarded by the courts under the Fair Trading Act 1986. The law and economics theory of optimal penalties provides the theoretical framework. This is used to develop a theory of optimal judicial sentencing based on the assumption that similar "optimality considerations" operate at both legislative and judicial levels.

The factors judges take into account in sentencing in Fair Trading Act cases, as disclosed in their written decisions, are quantified and used to approximate the optimality considerations. In this manner, features specific to the Fair Trading Act environment are accommodated.

Using a sample of Fair Trading Act cases, econometric analysis is employed to test whether the theory developed in this study is, in fact, capable of explaining differences in the sizes of the penalties imposed by the courts. While it is beyond the scope of this study to decide whether the individual penalties that have been imposed are optimal, an assessment is made about the extent to which optimality considerations explain the average variation in the size of penalties.

The study found that optimality considerations do explain some but not all of the variation in the size of penalties. In particular, four variables -whether the defendant intended to breach the Act, whether the defendant had previously breached the Fair Trading Act, whether the defendant is able to pay a large fine, and whether the defendant cooperated with the Commerce Commission in its inquiry - were shown to have a statistically significant impact on the size of the penalty.

The study suggests that there is reasonable degree of consistency of judicial sentencing under the Fair Trading Act.

CONTENTS

I. INTRODUCTION

In this study the determinants of the size of penalties awarded under the Fair Trading Act 1986 (the Act) are examined.

Fair Trading Act penalties have been considerably and persistently below the maximum penalties provided for in section 40, which contains the only criminal sentencing provision in the Act. Under that section, an individual who contravenes the Act[1] commits an offence, and is liable to a maximum penalty of $30,000, while a body corporate is liable to a maximum penalty of $100,000. The highest penalties awarded prior to 31 December 1998 were $15,000[2] and $63,000[3] respectively.

A law and economics approach is used to provide a theoretical explanation for the size of penalties under the Fair Trading Act. The theory behind this approach is articulated in recent literature on the economics of optimal penalties, particularly the work of Gary Becker (1968) and Nuno Garoupa (1997).

The theory of optimal penalties is not strictly a theory of judicial sentencing because it implicitly assumes that there is no judicial discretion. This distinction is relevant in the context of the Fair Trading Act because the Legislature and the Judiciary, in a sense, jointly determine the size of the penalty. The Legislature sets the maximum fines in the Act, and the Judiciary sets the fines in particular cases. The distinction is further relevant because it is the determinants of the size of individual fines, rather than the legislative maxima, which this study attempts to explain.

Nevertheless, the distinction is one of subject, not form. The theory of optimal penalties stems from a concern about the efficient or optimal allocation of *society's* scarce resources to maintain a level of criminal activity that maximises social welfare, once the resources used to detect, convict and punish wrong doers are taken into account. Judicial sentencing, on the other hand, is concerned with the provision of incentives (and disincentives) to *individuals*. The same optimal sentencing considerations effectively operate at both the macro and the micro levels.

As with judicial sentencing, the theory of optimal penalties extends in 'form' to the Commerce Commission's decision-making process. The Commerce Commission is an intermediate decision-making body, distinct from the Legislature and the Judiciary. The Commission receives its authority from various provisions in the Act and has become the primary enforcer of the Act. The Commission does not explicitly determine the size of penalties, but arguably exerts some influence, both through the screening and selection of complaints it receives from aggrieved parties not prepared or able to pursue private prosecution, and through the cases it chooses to pursue.

[1] Except sections 9, 14(2) and 23 of Part I.
[2] *Commerce Commission v Sean Wright (Black Magic)*, Unreported, DC, Henderson, 1997.
[3] *Commerce Commission v Bond and Bond*, Unreported, DC, Christchurch, 1997.

This study, however, focuses on the process of judicial sentencing. The study is insufficiently broad to conclude whether fines awarded to date are optimal, even if they are not maximal. Instead, the study focuses on whether optimality considerations, as defined by the theory of optimal penalties, underlie judicial decisions to award fines considerably lower than the legislative maxima provided in the Act.

The structure of this paper is as follows. In section II the legislative framework of the Fair Trading Act is examined, with some comment on the purpose of the Act and the implications its interpretation has for sentencing under the Act. A qualitative and diagrammatic analysis of the Commerce Commission's decision-making process is presented in section III. In section IV the theory of optimal judicial sentencing is outlined. This involves a brief explanation of the law and economic approach; Becker's original application of the theory to the area of criminal law; Garoupa's synthesis of the body of literature that has followed; and the application of the theory to sentencing under the Fair Trading Act.

Garoupa's methodology supplies the framework for constructing the necessary econometric regression model to test this theory. The econometric model and method of estimation are outlined in section V and the results and implications of the econometric analysis are the subject of section VI. Section VII concludes the study.

II. THE FAIR TRADING ACT 1986

A. Description of the Act

The Fair Trading Act is described in its long title as:

> An Act to prohibit certain conduct and practices in trade, to provide for the disclosure of consumer information relating to the supply of goods and services and to promote product safety and also to repeal the Consumer Information Act 1969 and certain other enactments.

More generally, the Fair Trading Act is designed to prevent misleading and deceptive conduct in trade and to encourage conduct that improves consumer product and service information and safety.

The Fair Trading Act is divided into parts. The first three parts constitute the substantive provisions of the Act. Part I deals with misleading and deceptive conduct, false representations, and unfair practices. Part II deals with consumer information. Parts III and IV deal with the safety of products and services. The obligations created in these parts are non-specific and, as a consequence, leave considerable room for judicial discretion in applying the Act to different circumstances. The Fair Trading Act also imposes strict liability in respect of most of these obligations. Apart from the section 44 defences, which can be activated on the grounds of "reasonableness", sentencing is the only area in the Act in which fault, or absence thereof, can be recognised.

Part V deals with enforcement and remedies. The Act creates both criminal and civil obligations. Criminal obligations are created explicitly in section 40 of the Act and can be enforced by any person or organisation with the money and the inclination. (Remedies available under section 43 of the Act are intended to alleviate some the financial constraints of bringing a criminal prosecution.) Civil obligations are not created explicitly, but the Act does provide additional civil remedies. These are available on application to any person or organisation pursuing civil action, except where the remedy sought is a section 42 order to disclose information or publish corrective advertising, in which case it is available only to the Commerce Commission.

The Commerce Commission has not only an enforcement role, but also an educational role as specified in section 6 of the Act. Only the enforcement role is relevant in this study and this role will be explored further in the next section.

B. Background

The Fair Trading Bill was copied almost verbatim from part V of the Australian Trade Practices Act 1974. The government's CER (Closer Economic Relations) policy accounts for much of the decision to follow Australian, rather than equivalent UK,

legislation.[4] The fact that Labour Governments were in power in both New Zealand and Australia at this time was undoubtedly another important factor. The Selling Practices Act, the proposed predecessor to the Fair Trading Act, which was recommended in 1980 under the National Government, was clearly akin to the UK regime.[5]

The duplication was unquestionably a cost-saving measure. The government was able to save time and money in the drafting process, and New Zealand benefited enormously from the substantial body of Australian precedent, including sentencing precedent. Unfortunately, the duplication cloaks much of the policy behind the Act. In particular, there is no indication as to why the maximum fine for individuals was increased from the $20,000 stipulated in the Trade Practices Act to $30,000 in the Fair Trading Act. The introduction of the Commerce Act in the same year further obscures the policy rationale behind the Fair Trading Act. Significant parts of the Commerce Act 1986 were also adapted from the Trade Practices Act. It is interesting, however, that while the Trade Practices Act was the archetype for both the Fair Trading and the Commerce Acts, New Zealand chose to introduce two separate pieces of legislation.[6]

The Fair Trading Act was a product of two separate bills: the Fair Trading Bill and the Product Safety Bill. This explains the two seemingly distinct functions of the Fair Trading Act: firstly, to create part of the infrastructure necessary to underpin the dramatic market reforms in the 1980s; and secondly, to consolidate and extend existing consumer protection legislation. The two bills were ultimately combined in the House because they had "identical administrative provisions".

The Fair Trading Act as market reform legislation

The market reforms in New Zealand in the 1980s were, in part, a response to the heavy regulation of the economy in earlier decades. The reforms were based on the proposition that efficiency and equity concerns could be separated, and that the market achieves greater economic efficiency from open competition[7] with minimal or no barriers to entry.[8] The availability of information and the reputation of traders supported by contract law were important foundations for the efficient working of markets. The Fair Trading Act was designed to improve the credibility (i.e. accuracy) of information flows.

The Fair Trading Act presupposes the potential for the market to fail to provide credible information. This is evidenced by the fact that the Act does not require that market failure be proved, a feature that it shares with its Australian counterpart. The presumption of some market failure is inherent in the Trade Practices Act 1974. In contrast, the presumption inherent in the United Kingdom's Trade Descriptions Act 1968

[4] *Fair Trading Bill 1985: Explanatory Booklet*, (Department of Trade and Industry, November 1985,) p. 4.
[5] *Proposals for a Selling Practices Act: Report of the Ministerial Working Party Reviewing Certain Consumer and Commercial Legislation*, (Department of Trade and Industry, Wellington, July 1980,) p. 1.
[6] A possible explanation is that one of the perceived deficiencies of the Commerce Act 1975 was that it dealt with too many purposes, including consumer protection. See: *The Commerce Bill 1985: A Background to the Bill and an Outline of its Provisions*, (Department of Trade and Industry, Wellington, August 1985,) p. 11.
[7] An efficient market is one that ensures that resources are accurately allocated to their most valued uses.
[8] See: Evans, Grimes, Wilkinson, and Teece (1996).

is that the market provides the 'first best' solution to consumer information problems. Market failure must be proved before intervention is considered.[9]

The question of market failure, therefore, should not be an explicit consideration in adjudicating under the Act. The presumption of some market failure is a policy consideration. This does not mean that Judges cannot consider the effects of a breach on the market. In fact, section 19 of the Act, which deals with bait advertising, explicitly requires that regard be given to the nature of the market. It is difficult to conceive how the Act would achieve its purpose (of ameliorating market failure) if no regard is given to the effects of a breach on the market.

The Fair Trading Act is concerned with identifying whether there was a breach and the type or scale of the breach, not why there was a breach.

The Fair Trading Act as consumer protection legislation

The Fair Trading Act protects consumers by making it an offence for traders to mislead or deceive consumers in such a way as to cause them, or risk causing them, financial or physical harm, or to erode their freedom of choice. The Act provides a powerful bargaining platform from which consumers who are misled or deceived can seek redress. Through the Commerce Commission, the Act also provides a means of redress for consumers who would otherwise not be willing or able to incur the cost of litigation. In this respect, the Act mitigates the need for class action.

The Commission, however, goes further than this. One of its stated roles is to seek clarification of the Fair Trading Act and take proactive cases where there is no complainant.

C. Interpretation of the Act

The dual functions of the Fair Trading Act, in underpinning market reform and promoting consumer protection, may exploit some communality. Consumer protection is an obvious result of legislation designed to improve the accuracy of market information. Similarly, a more informed market may be a result of legislation designed to protect consumers.

The integration of the Product Safety Bill with the Fair Trading Bill, however, highlights a potential interpretation issue in the resultant Fair Trading Act. The Product Safety Bill was clearly a piece of legislation designed to protect consumers. The Fair Trading Bill, on the other hand, was a piece of legislation designed to facilitate market reforms. As already suggested, these two functions arguably are consistent in that they ensure the provision of more accurate consumer information. The nature of what is being protected, however, is quite different. The product safety provisions are concerned with protecting the physical well being of consumers. The rest of the Act is concerned with

[9] See *Proposals for a Selling Practices Act: Report of the Ministerial Working Party Reviewing Certain Consumer and Commercial Legislation*, (Department of Trade and Industry, Wellington, July 1980.)

the protection of consumers' financial interests and freedom of choice. Actions that harm consumers in a physical sense, or risk harm to them, traditionally attract a great deal more public censure than actions that, for example, fail to disclose all the conditions of an offer in an advertisement. Such values might affect the interpretation of the Act, particularly in relation to the size of penalties. Breaches of the product safety provisions can be expected to incur considerably higher penalties than breaches of the other provisions in the Act, even if the breach to consumer information is greater in the latter. This disparity is likely to be greater if the importance of consumer protection overshadows the importance of a more informed market. This was invariably the case in the early stages of the Act, as evidenced by the statement of Grieg J:

> In my view, the more substantial fines are to be reserved for repeated offenders, for deliberate breaches, particularly if done for commercial gain, and cases where there is widespread and large-scale breach *with a real risk of damage or injury to consumers*.[10] (Emphasis added.)

[10] *LD Nathans v Commerce Commission* (1988) 3 TCLR 362.

III. THE COMMERCE COMMISSION

The role of the primary enforcer of the Fair Trading Act has been made the responsibility of the Commerce Commission. A brief discussion of the Commission's decision-making process, illustrated below, provides sufficient context to extend conceptually the general theory of optimal penalties to a discussion of optimal sentencing, under the Fair Trading Act, in the next section. The theory of optimal penalties makes some general assumptions about the dynamics of crime prevention, which are not necessarily representative of the judicial decisions that have been made in the enforcement of the Fair Trading Act.

The Fair Trading Division of the Commerce Commission is responsible for the public enforcement of the Fair Trading Act. This involves receiving and (potentially) acting on complaints, investigating potential breaches of the Act and educating potential offenders, and traders generally, about their obligations under the Act through the Regional Visit Programme, publications, seminars, and consultation.

The Legal Division of the Commerce Commission is responsible for the prosecution of breaches of the Act, on behalf of the Commission. (The decision to prosecute, however, rests with the Commissioner, not staff.) Under the Act, the Commission has the power to take both criminal and civil action on behalf of others. The Commission can also take pro-active criminal action where there is no complainant. To this end, the Commission undertakes surveillance on a mix of issues and industries.

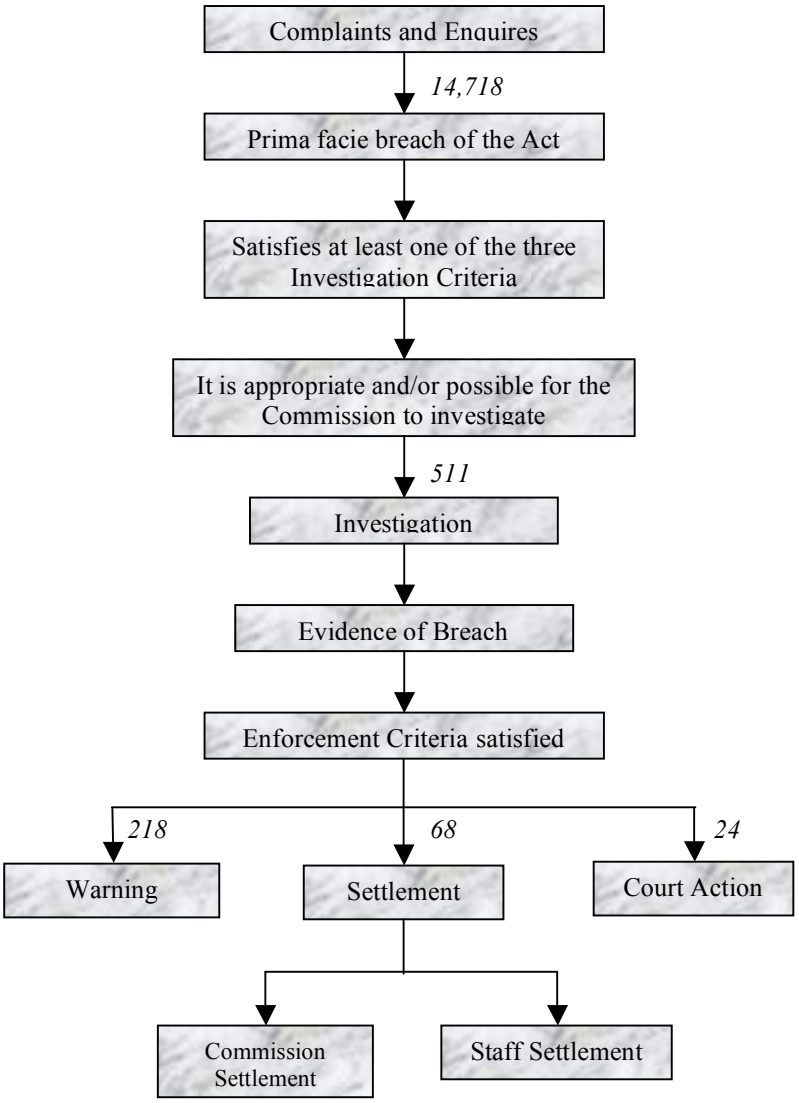
Although the Commerce Commission receives thousands of complaints and enquiries from consumers and traders every year, it has sufficient resources to pursue only a handful of these cases. To process the complaints and enquiries, and to determine which merit further action, the Commission has developed working investigation and enforcement criteria.

Complaints and enquires received by the Commission are filtered initially according to whether there appears to be a prima facie breach of the Act. If a prima facie breach exists, each complaint is assessed against the investigation criteria. This involves a subjective assessment of whether there exists a "major market problem", blatant disregard for the law, or an opportunity for setting or amending a precedent. If one of these criteria is met, an interim assessment is made as to whether it is appropriate for the Commission to investigate. An investigation will generally proceed where the prima facie breach is of an area of the Act that the Commission has identified as a problem. Should the investigation find sufficient evidence of a breach, the question of enforcement is addressed. By this stage, it is unusual for the Commission to decide not to pursue a case further. The enforcement criteria are used to work out the appropriate method of enforcement. If the breach is not deliberate and is reasonably insignificant, a warning is given. If there is sufficient evidence to prove a breach, and a real change to the trader's conduct would be effected through court action, court action will be pursued in accordance with the Act. The particular remedies under the Act also influence the decision to take court action. If a better outcome would be achieved out of court,

settlement is usually sought. If settlement involves an undertaking, Commission approval must be given.

It would be interesting from a law and economics perspective to assess the optimality of these decision-making processes. This, however, would require a quantitative assessment similar to that being undertaken in this study for judicial sentencing under the Fair Trading Act. Such an assessment is beyond the scope of this study.

The Decision-Making Process of the Commerce Commission with Fair Trading Act Issues, June Year 1997/98[11]



[11] Source: *Commerce Commission Annual Report 1997 – 1998*. See appendix A for details on the decision-making criteria.

IV. THE THEORY OF OPTIMAL JUDICIAL SENTENCING

A law and economics approach is used to explain the variation in the size of penalties imposed in different cases under the Fair Trading Act. Law and economics uses the 'economic approach' to explain legal behaviour. The 'economic approach' holds that individuals are instrumental rationalists: they make their decisions by weighing the respective costs and benefits of their proposed action. In using this approach, the assumption is implicitly made that judges are rational economic decision-makers. This means that in awarding fines, judges only seek to take into account those factors that have a bearing on the maximisation of net social welfare.[12]

Legislative maxima are placed on fines under the Fair Trading Act: $30,000 in respect of individuals, and $100,000 in respect of bodies corporate. A maximum fine has never been awarded under the Fair Trading Act to date.[13] Fines have always been less than $30,000 and $100,000, and are less than the maximal fines anticipated by the Act. The use of the word "maximum" in section 40 provides a clear indication that the legislature intended maximum fines to be reserved for the most serious breaches of the Act. However, there are no considerations provided in the Act to indicate what does or does not constitute a serious breach. Consequently, the award of a less than maximal fine presupposes the existence of judge-made considerations, which in turn invites an inquiry as to the explanation of why such a fine was awarded. Because of the common law doctrine of precedent, we expect that such an explanation is articulately consistent. On face value, we cannot actually tell whether the explanation is articulately consistent. However, this can be tested by estimating a model that allows an investigation of the systematic determinants of the sizes of fines.

No work (as far as I am aware) has been done on the optimality of judicial sentencing. However, work of a more general nature has been done on optimal penalties for individuals under the theory of optimal penalties.[14]

The economic model tested in this study is based on the theory of optimal penalties, but extended to recognise the distinction between legislation and judicial decision-making. Legislative decision-making concerns the creation of a penalty-process that applies to everyone. Judicial decision-making, on the other hand, concerns the application of that process to individuals. However, depending on the degree of discretion the legislature allows the judiciary, many of the considerations relevant in determining the optimal penalty are also relevant in applying them. The theory of optimal penalties provides a guide as to what variables are relevant considerations in achieving an optimal penalty. To this extent, the theory of optimal penalties provides a valuable framework for the study.

[12] Although efficiency is not an explicit objective of the Act, it is consistent with the objectives of the Act discussed in section II of this paper.
[13] 31 December 1998.
[14] The theory of optimal penalties is also known as the law and economics of penalties and the theory of optimal law enforcement. The phrase "optimal theory of penalties" is attributable to Gary Becker (1968).

A. The Theory of Optimal Penalties

The theory of optimal penalties originates from Gary Becker's paper on Crime and Punishment published in 1968. Becker used an economic approach to explain behaviour inherent in the criminal justice system. The economic approach holds that individuals are instrumentally rational, in that they make decisions by weighing the respective costs and benefits of alternative courses of action. Under this approach, the concept of justice is treated as being one of economic efficiency: maximisation of the social planner's objective function subject to individuals' decisions to commit crime.[15]

The theory of optimal penalties is an application to the area of criminal law of the economic theories of utility maximisation and externalities. Both criminals and social planners are assumed to be rational economic agents. Accordingly, criminals maximise their expected utility (EU) while social planners maximise social welfare (W), which is the sum of the utility functions of all individuals making up society. The criminal does not observe the cost of detection and conviction in formulating his or her probability of being detected and convicted, or the severity of punishment. Similarly, the social planner does not observe the benefit to the offender or the harm to society of criminal activity.

Mathematically, the expected utility to the criminal (EU) is a function of the probability that he or she will be detected and convicted (p), the benefit of the criminal activity (b) and the severity of the punishment (f):

$$EU = pU(b - f) + (1 - p)U(b),$$

where b is the criminal's income if not caught, and (b – f) is the criminal's income if he or she is caught.

Social welfare (W), on the other hand, is a function of the benefit to the criminal of the criminal activity (b), the harm to society of the criminal activity (h), and the cost to society of detection and conviction (c):

$$W = (b - h) - c.$$

The theory of optimal penalties aims to find the level of social resources necessary to reduce the level of criminal activity to that which maximises social welfare. The theory recognises that social welfare is unlikely to be maximised where criminal activity is completely eliminated. At some level of criminal activity, the value of the additional resources necessary to deter the remaining criminal activity is likely to exceed the value of having that criminal activity deterred.

Social resources are absorbed in the prevention of criminal activity, according to the theory, in two principal ways: *detection and conviction,* and *punishment*. The policy instruments used to deter criminals, therefore, are either to increase the probability of

[15] Garoupa (1997) p 268.

detection and conviction, p(c), or to increase the severity of punishment, p(f). Punishment may involve, amongst other things, the levying of fines, imprisonment, periodic detention, community service, or rehabilitation. These are the "penalties" that are described in the optimal penalty literature.

An important premise of the theory of optimal penalties is that criminal activity *may* be socially valuable. Gains and costs to an individual associated with undertaking a criminal act are interpreted as gains and costs to society. Hence the model of optimal penalties abstracts from the morality of criminal activity. This has important implications for the application of the model to the Fair Trading Act. The model does not accommodate morality, and therefore, does not consider any associated social stigma attached to criminal acts that physically harm or risk harming individuals. If judges attach weight to this stigma in sentencing, they effectively take into account (in the model's terms) a non-optimal consideration,[16] and the model will thus be imperfect in explaining the variation in the size of penalties.

According to Becker:

> Whether "crime pays" is ….. an implication of the attitudes offenders have towards risk and is not directly related to the efficiency of the police or the amount spent on combating crime ….. the social loss from illegal activities is usually minimised by selecting [the probability and severity of punishment] in regions where risk is preferred, that is, in regions where "crime does not pay."[17]

Provided offenders are averse to risk, there is a negative correlation between the amount of social resources allocated to preventing crime and the level of criminal activity: the more resources allocated, the more crime is deterred. The marginal deterrence of increased resources (the probability and severity of punishment), however, is diminishing. Optimal crime (and punishment) requires that the marginal cost of increasing the level of crime equals the marginal benefit generated by the increased crime itself. The optimal punishment, therefore, is equal to the cost of the marginal harm done to society.[18]

Becker's more controversial result (as demonstrated by Nuno Garoupa (1997)) is that "social welfare is increased if fines are used wherever possible".[19] Becker's reasoning is that fines represent costless transfers between members of society whereas other penalties do not.

> The total social cost of punishment is the cost to offenders plus the cost or minus the gain to others. Fines produce a gain to the latter that equals the cost to offenders, aside from collection costs, and so the social cost of fines is about zero

[16] The model may take into account reputation. Arguably, this is an important source of morality. Thus, this leads to behavioural rules that society takes as having basis in morality. If this completely encapsulates the stigma, then taking reputation into account may not be "non-optimal".
[17] Becker (1968) p. 179.
[18] Becker (1968) p. 192.
[19] Becker (1968) p. 193.

….. The social cost of ….. other punishments, however, generally exceeds that to offenders, because others are also hurt.[20]

The principal results of Becker's model, as Garoupa sees them, are that increases in the probability and severity of punishment deter crime, and that fines are the preferred form of punishment as they represent costless transfers, while other forms of punishment do not. A further result that Garoupa extracts is that the optimal fine should be the maximum fine. The maximum fine that can be imposed is equivalent to the entire wealth of the individual criminal (F). From the assumption that fines represent costless transfers, it follows that no cost is associated with increasing the level of the fine. The optimal level of the fine is, therefore, the maximum fine because we know, from Becker, that increasing the severity of punishment (in this case the level of the fine) has a positive, albeit diminishing, effect of the level of criminal activity.

Garoupa surveys each of the major qualifications to Becker's model suggested by others in light of how they modify the result that the maximum fine is the optimal fine. It is his results that are used to formulate a model that may help to explain the variation in the sizes of penalties under the Fair Trading Act.

Polinsky and Shavell have been major contributors to the literature that Garoupa has surveyed. In their most recent contribution, Polinsky and Shavell (2000) have expanded on the qualifications to Becker's model.

Some adjustments need to be made to the basic theory, however, to accommodate judicial sentencing under the Fair Trading Act. These are briefly outlined below and in more detail in section V following.

B. The Theory of Optimal Judicial Sentencing and the Fair Trading Act

The theory of optimal judicial sentencing is an extension of the theory of optimal penalties. As mentioned earlier, this extension must recognise that legislative and judicial decision-making involve substantially similar considerations for substantially similar situations.

The application of the theory of optimal penalties to sentencing under the Fair Trading Act is simplified by the fact that fines are the only penalty provided in the Act.[21] For the

[20] Becker (1968) p. 180.

[21] **SECTION 40 CONTRAVENTION OF PROVISIONS OF PART I, PART II, PART III, AND PART IV IS AN OFFENCE**
40(1) [Fines] Every person who contravenes any of the provision of Part I (except sections 9, 14(2), and 23), or Part II or Part III or Part IV of this Act, commits an offence and is liable on summary conviction –
(a) In the case of a person other than a body corporate, to a fine not exceeding $30,000; and
(b) In the case of a body corporate, to a fine not exceeding $100,000.
40(2) [Offences similar] Where a person is convicted, whether in the same or separate proceedings, of 2 or more offences in respect of contraventions of the same provisions of this Act and those contraventions are of the same or a substantially similar nature and occurred at or about the same time, the aggregate amount of any fines imposed on that person in respect of those convictions shall not exceed the amount of the maximum fine that may be imposed in respect of a conviction for a single offence.

purposes of applying the theory to Fair Trading Act sentencing, the legislative maxima specified in section 40 of the Act are taken to be the maxima of the "maximal fines" (F) discussed by Garoupa.[22] The variables in Becker's model, in turn, represent basic "optimality considerations". Provided these are satisfied, the fine awarded should be the maximum fine. The variation in the size of the fines under the Fair Trading Act, then, is caused by additional considerations, which may not be in accord with the economic approach. However, according to Garoupa, the fine may still be "optimal" even though it is not the maximum fine, provided the variation is caused by any of the additional "optimality considerations" he surveys, which are not accommodated by Becker.[23]

Unfortunately, an actual assessment of the optimality of the individual fines is outside the scope of this study. Such an assessment would require an investigation into what actually represents an optimal fine in each of the circumstances in which a fine was imposed. A similar investigation would be required to assess the optimality of the legislative maxima in section 40 of the Act. This study can only tell us whether the "optimality considerations", as hypothesised by Becker and others and synthesised by Garoupa, do in fact explain how the size of the penalties vary on average on the basis of relevant factors.

If Garoupa's "optimality considerations" do not adequately explain the variation in the size of penalties under the Fair Trading Act, then it can be concluded that judges are not awarding optimal penalties according to the theory of optimal judicial sentencing. Alternatively, it could be concluded that the theory is an inaccurate representation of judicial sentencing, in that it does not take into account all relevant considerations, or lack thereof, in sentencing.

40(3) [Limitation period] Proceedings under this section may be commenced at any time within 3 years after the matter giving rise to the contravention arose.

[22] The "maximal fine" (F) that can be imposed is equivalent to the entire wealth of an individual. In the context of the Act, $30,000 is assumed to represent the maximum wealth of a person who is not a body corporate, and $100,000 to represent the maximum wealth of a body corporate. This is a strong assumption, but not a crucial one: the analysis in the study is of variation *per se* in the size of penalties awarded under the Act, not variation *from the legislative maxima*.

[23] Becker's model is considerably more generalised than those that have followed, as it is based on a homogenous representative society.

V. THE MODEL OF OPTIMAL FAIR TRADING ACT SENTENCING

In this section, an econometric model is developed to test the ability of the theory of optimal penalties to explain the variation in the size of average penalties under the Fair Trading Act.

As mentioned in the previous section, the theory is amenable to econometric analysis in the context of the Fair Trading Act because fines are the only penalty in the Act. The maximum fines in the Act can be treated as if they were the "maximal fines" discussed by Garoupa in his synthesis of the theory of optimal penalties.

By way of introduction, a standard econometric model is specified initially. The variables in the model are then introduced and explained. Because the data were collected before the theory was considered, two variants of the econometric model are examined: an unrestricted variable model and a restricted variable model. The unrestricted model includes all the variables that were collected for the study. The restricted model includes mainly those variables that approximate the "optimality considerations" in the theory of optimal penalties. Following this, the data and the estimation procedure are discussed briefly.

A. Econometric Regression Model

A linear, single equation, multiple variable regression model is used for the econometric analysis. This model is of the form:

$$y_i = \alpha_i + \beta_1 x_{1i} + \beta_2 x_{2i} + ...+ \beta_k x_{ki} + \mu_i$$

where: y is the penalty,
x is an explanatory variable,
k is the number of variables,
i = 1,..., n, and n is the number of observations,
α is the constant or intercept,
β is the coefficient of X, the variation in the size of penalties *explained* by the model or set of explanatory variables,
and μ is the error term, which is the variation in the size of penalties *not explained* by the model or set of explanatory variables.

B. Explanatory Variables

A description of all of the explanatory variables quantified for the study is provided in Table 1. These explanatory variables were chosen without reference to economic theory. Instead, they represent the sentencing criteria developed by New Zealand Courts since the Fair Trading Act came into force on 1 March 1997, as well as the basic details about each case.[24]

Table 1
Specification of Explanatory Variables

Aggregate penalty	The total penalty imposed in each case against the defendant. The variable does not include compensation, witness and evidentiary expenses, court costs or legal fees.
Penalty per information/charge	The penalties, in each case against the defendant, imposed against individual informations. An information is an official allegation by the Commission (the informant) against an individual or company (the defendant) of a breach of a section of the Act. A separate information is filed for every section allegedly breached and for every individual or person.
Type of defendant	The type of defendant convicted: individual or body corporate.
Section	The section of the Fair Trading Act 1986 that was allegedly breached.
Informations per section	The number of informations alleging breaches of particular sections of the Act.
Number of informations	The number of informations which resulted in convictions. Not all convictions receive sentences. In respect of some convictions the defendant may be discharged. Alternatively, the judge may award a total fine and not apportion it between the relevant informations.
Date	The date of the decision, not of sentencing. In some cases the dates are the same. Decision dates are more reliable and comprehensive than sentencing dates.
Court	District Court, High Court or Court of Appeal.
CPI	Consumer Price Index
City	The city the court resided in during the hearing.
Judge	The judge who adjudicated and sentenced in the case.
Intent	This variable attempts to capture the mindset of the defendant or motivation for the breach. 'Intent' constitutes one of the following: an act that the defendant knew he or she was doing, an act that the defendant did to make a profit, or an act the defendant did with the Fair Trading Act in mind.
Negligence	Negligence is the failure of the defendant to take adequate steps to prevent a breach of the Act.
Freedom of choice prejudice	A breach that influences consumer behavior.
Financial prejudice	A breach to the financial detriment of consumers.
Safety prejudice	A breach that threatens safety or risks physically or mentally injuring consumers.
Physical harm prejudice	A breach that actually harms consumers, physically or mentally.
Producer harm prejudice	Financial detriment to competitors. Usually indirect harm in terms of lost sales.
Efforts to correct breach	Steps taken to prevent future breaches and/or negate the effect of the breach. Such steps could include the implementation of compliance programmes, corrective advertising and offers to repurchase any goods sold as a result of the breach. The speed with which such measures are put into practice is also likely to be a factor taken into account by the courts. (Ex post)
Deterrence	The anticipated increase in compliance with the Act, principally by competitors, following the imposition of a penalty.
Incidental profit	The profit earned exclusively from the breach, over and above what would have been earned *without* the breach.
Maximum fine	Whether the maximum fine is taken into account by the judge in sentencing.
Ability to pay	The financial position of the defendant.
Plea	Guilty or not guilty. Evidence of remorse.
Previous offences	Previous offences against the Act. Includes warnings, settlements, and convictions. Does not include prosecutions against the defendant that have been dismissed.
Cooperation with Commission	The degree to which the defendant assisted the Commission with its inquiries. Includes ex-ante efforts to prevent breaches of the Act – particularly in light of the Commission's pro-active enforcement practice. Evidence of remorse. (Ex ante)
Degree of dissemination	The number of consumers *potentially*, not necessarily actually, affected by the breach. Implicitly takes into account the target consumer audience, i.e., distinguishes between 'consumers' and 'people'. For example, while 10,000 people may have seen a misleading advertisement for sheep flea control, only 1,000 or so people would ever be interested in purchasing the product. To this

[24] See Appendix B for more details about data collection, and Appendix C for the legal and economic relevance of each of the variables, their expected correlation with the size of the penalty, and details about their quantification.

	extent, the degree of dissemination, in terms of the number of people, is great, but in terms of potential customers, it is not. The latter is what is measured by this variable.
Market	The product the defendant sells. (While this does not necessarily define the 'market' that the defendant operates in, it is the best approximation given the details provided in the cases.)
Market share	The share of the product the defendant sells in the New Zealand domestic market (locally or nationally.)
Penalty submissions relied upon	The Commission has adopted a standard penalty submission to help the Court determine sentence. The submission synthesises the relevant precedent on sentencing with presumably a slight bias towards the Commission's preferred outcome. While the judge will take penalty submissions into account, he or she may or may not let it dictate their decision.
Influence of others	The defendant may not have been solely responsible for the breach.
Pre-sentencing prejudicial behavior towards defendant	Actions by the Commission before judgment that have the potential to prejudice the defendant. For example, the early media release by the Commission regarding the Bond & Bond case in 1996.
Public status	Extent of public influence or control created by reputation.
Other sanctions	Other costs associated with the prosecution including compensation, court costs, legal fees, witness expenses, and evidentiary costs.
Origin of complaint	Consumer, competitive trader, or the Commerce Commission (proactive prosecution only).
Extent of departure from truth	The extent to which the breach represents a departure from the truth. It ranges from literal truth, through non-disclosure, to falsity. In cases where the defendant is convicted of false representation, it is trite.
Extent of breach	The incidence of the breach.

Unrestricted Model

The unrestricted model includes most of the variables that were quantified for the study. A number of the variables were omitted from analysis because of inadequacies in the data quantification and the consistency of information provided in the cases, or because they represented outliers.[25] No integrating economic theory underlies the selection of these explanatory variables.

Penalty = Type of defendant
Number of informations
Decision date
CPI
Court
City
Intent
Negligence
Prejudice to consumers' choice
Financial prejudice to consumers
Safety prejudice to consumers
Financial prejudice to producers
Efforts to correct the breach
Incidental profit
Maximum fine
Ability to pay
Plea
Previous offences
Cooperation with the Commission
Degree of dissemination
Market share
Penalty submissions relied upon
Influence of others
Public status
Other sanctions
Extent of departure from truth
Extent of breach

[25] Details on the variables that were omitted, and why they were omitted is given in Appendix B.

Restricted Model

The explanatory variables in the restricted model are selected from Garoupa's synthesis of the theory of optimal penalties.[26] As explained in the previous section, although the theory of optimal penalties is not explicitly a theory of judicial sentencing, considerations relevant to determining the optimal size of the penalty are relevant to sentencing, provided sentencing involves some decision as to the size of the penalty.

Garoupa's synthesised model of optimal penalties can be summarised as follows:

The social planner maximises social welfare [$W = (b - h) - c$] subject to criminals maximising their expected utility [$EU = pU(b - f) + (1 - p)U(b)$].

The basic (Becker) variables, or "optimality considerations", are:

p - probability of detection and conviction
b - benefit to the offender of criminal activity
f - severity of punishment
h - harm to society of criminal activity
c - cost to society of detection and conviction

Relevant additional (non-Becker) variables, also "optimality considerations", are:

w - wealth variations among individuals
θ - individual characteristics of the offender that help the offender to avoid detection
φ - repeat offenders
F - maximum fine

Some of these variables (optimality considerations) are approximated by factors that judges appear to take into account in sentencing under the Fair Trading Act, and these are listed in Table 2. A specific data quantification technique was used to convert some of the raw data into useful variables, as explained in Appendix B. Optimality considerations that are not adequately approximated by the data are omitted. Likewise, data that do not comfortably fall into the optimality considerations are omitted from analysis, apart from certain "non-optimality considerations" whose omission would render the model statistically insignificant.

The resulting restricted model variables are given in Table 2.[27]

[26] Garoupa (1968) pp.267-295.
[27] See Appendix D for details.

Table 2
Restricted Model Variables

Optimality considerations	Approximating variables
p	None
b	Incidental profit
	Effort to correct breach
f	Aggregate penalty
h	Prejudice to consumers' freedom of choice
	Financial prejudice to consumers
	Safety prejudice to consumers
	Financial prejudice to producers
c	Guilty plea
	Cooperation with Commerce Commission
w	Ability to pay
θ	Intent
φ	Previous offences
F	Type of defendant
Non-optimality considerations	
	Number of informations
	CPI

The restricted model specified below uses all of the explanatory variables listed in Table 2. The choice of these particular explanatory variables is dictated both by economic theory and by econometric considerations.

The full or unrestricted model is estimated first, followed by the restricted model. By comparing the models' statistics, the restrictions (i.e. the variables excluded from the restricted model) are accepted using a joint significance test with 5% significance.[28] This means that, jointly, the omitted variables do not (statistically) significantly explain variation in the size of the penalty to a degree great enough to warrant their inclusion. Further linear restrictions were considered but were not adopted.[29] The linear restrictions were designed to isolate the effects of groups of the variables in Table 2.

Penalty = Type of defendant
Number of informations
CPI
Intent
Prejudice to consumers' choice
Financial prejudice to consumers
Safety prejudice to consumers
Financial prejudice to producers
Efforts to correct the breach
Incidental profit
Ability to pay
Plea
Previous offences
Cooperation with the Commission

[28] See Shazam results, Appendix F.
[29] See Appendix D and Appendix F for linear restrictions.

C. Data

84 out of about 130 Fair Trading Act cases with sentencing remarks were quantified for the study. No selection was involved in the quantification of the cases; the omissions are due primarily to availability of the sentencing remarks.[30]

D. Estimation

Econometric estimation involves estimating the unknown parameters α and β in the econometric regression model specified above. The intercept, or constant, term is α and the β are the slope parameters, or the regression coefficients. The regression coefficients are of particular interest because they tell us the variation in the dependent variable, penalty, caused by a unit variation in each of the relevant explanatory variables.

Tobit is used to estimate the model because the dependent variable, penalty, is bounded below by zero. In our model, the limit is zero because only penalties greater than or equal to zero are observed. Tobit assumes that the error terms are normally distributed and, given this, properly accounts for the zero lower limit. Had there been fines at the legislated upper limit this feature would have had to have been accounted for in a similar way. Out of the 84 observations in the study, there are 4 lower-limit observations and 80 non-limit observations.

[30] More information on the data is included in Appendix B.

VI. ECONOMETRIC RESULTS AND INTERPRETATION

A. Results

Shazam (version 7), an econometrics computer programme, was used to generate the econometric results for this study.

Table 3 displays the results for the unrestricted and the restricted regressions.[31] The results for the latter are of particular interest. The restricted model incorporates the economic theory of judicial sentencing, and therefore tests the economic explanation of what determines the size of penalties under the Fair Trading Act. If the unrestricted model has no more explanatory power than the restricted model, the economic basis of the restricted model is supported by the data.

Table 3
Econometric Results for the unrestricted and restricted regressions

	Unrestricted Model	**Restricted Model**
# Observations	84	84
# Explanatory variables	27	14
Degrees of freedom including constant	56	69
Degrees of freedom excluding constant	57	70
# Limit Observations	4	4
# Non-limit observations	80	80
Variance of the estimate (σ^2)	137120000	166570000
Standard error of the estimate (σ)	11710	12906
The predicted probability of Y > limit given average X(I)	.8013	0.7788
The observed frequency of Y > limit	.9524	0.9524
At mean values of all X(I), E(Y)	11207.0781	11554.3757
Log-likelihood function	-865.30951	-873.41822
Mean-square error	119692580	150487000
Mean error	2419.1570	2551.9376
Squared correlation between observed and expected values	.66315	0.56685
Constant	-8452500 (-1.3754)	-81237 (-3.4982)
Type of Defendant (Dummy)	3458.2 (0.93261)	5638.9 (1.4686)
Number of Informations	947.24 (3.0662)	1107.4 (3.8088)
Date	4273.7 (1.3611)	
CPI	-75.118 (-0.64747)	75.272 (3.1395)
Court	-4943.2 (-0.90469)	

[31] See Appendix F for complete Shazam results.

City (Christchurch Dummy)	4122.3 (1.1522)	
Intent	5466 (2.6264)	6002 (3.5663)
Negligence	2023.5 (0.97039)	
Freedom of Choice Prejudice	922.67 (0.32859)	114.46 (0.05369)
Financial Prejudice	-4555.1 (-1.9341)	-3265.2 (-1.5713)
Safety Prejudice	669.97 (0.21627)	1776.8 (0.67967)
Producer Harm Prejudice	-473.76 (-0.20752)	-122.44 (0.065799)
Efforts to Correct the Breach	1135.7 (0.57714)	2711.7 (1.6403)
Incidental Profit	2546.1 (1.3283)	2123.9 (1.1179)
Maximum Fine	3270.5 (0.96311)	
Ability to Pay	3032.9 (1.227)	4182.4 (1.9411)
Guilty Plea	-2181.1 (-0.70161)	-2372.2 (-0.75379)
Previous Offences	-10057 (-2.1349)	-10695 (-2.3285)
Cooperation with Commission	-2548 (-1.457)	-2996.8 (-1.7867)
Degree of Dissemination	-2039.5 (-0.87194)	
Market Share	-1077 (0.22285)	
Penalty Submissions Relied Upon	3792.6 (0.97829)	
Influence of Others	3389.4 (0.97474)	
Public Status	-301.25 (0.25035)	
Other Sanctions	-1956.1 (-0.53032)	
Extent of Departure from Truth	2817.8 (1.0874)	
Extent of Breach	-1124.7 (-0.73441)	

B. Interpretation

Shazam generates both normalised coefficients (β/σ) and regression coefficients (β). The normalised coefficients are estimated using Tobit and the regression coefficients are calibrated by multiplying the normalised coefficients by the estimate of σ. It is the regression coefficients that allow interpretation of the results recorded in Table 3 in terms of the econometric regression model outlined in the previous section.

Shazam Statistics

Shazam generates a number of useful statistics for the Tobit regression: the variance of the estimate (σ^2); the standard error of the estimate (σ); the predicted probability of Y > limit given average X(I); the observed frequency of Y > limit; the mean-square error and mean error; and the squared correlation between observed and expected values. Each of these is recorded in the chart above and will be explained in terms of the *restricted* econometric regression model and the results in Table 3.

The variance of the estimate (σ^2) and the standard error of the estimate (σ) are the variance and standard deviation of μ, the error term. The standard error of the estimate, which is the square root of the variance, is easier to interpret. In the restricted model, the standard error of the estimate is 14,148. This indicates that the *estimated* penalty varies by $14,148.00, on average, from its mean. The mean of the estimated penalty is given by the statistic E(Y), at mean values of all X(I). In the restricted model this is $11,554.38. The estimated penalty, therefore, varies quite significantly from its average value.

The predicted probability of Y > limit given average X(I) and the observed frequency of Y > limit are self explanatory, given that the limit is zero. In the restricted model, the observed frequency of the penalty being greater than $0.00 is 95.2%. This is simply the probability that 80 out of the 84 observations have penalties greater than zero. The fact that the predicted probability is only 77.9% indicates the effect of censoring on the explanatory variables. The difference is either a reference to the non-linear nature of the true or underlying model, or the fact that there is more dispersion in X, the set of explanatory variables, about its mean in the predicted model.

The mean error and squared correlation give some measure of the 'fit' of the model to the data. Unfortunately, Tobit does not give a convenient measure of the goodness of fit.

The mean square error and the mean error tell us the variation of the estimated penalty values from the observed data. As with the standard error of the estimate, the mean error is easier to interpret. In the restricted model, the mean error is 2551.9376. This tells us that the *estimated* penalty varies, on average, by $2551.94 from the actual observations of the penalty. Ideally, we would want there to be no variation, although this is not a bad result.

The squared correlation between the observed and expected, or predicted, values in the restricted model is 0.56685. Given that perfect correlation is represented by the value 1, and that there is variation in the data, this result is also reasonable.

Regression Coefficients

The values, which correspond to each of the variables in Table 3, are the regression coefficients (βs) for each of those variables. They are the slope parameters. They tell us the variation in the aggregate penalty correlated with, or 'caused' by, a unit variation

in the variable the coefficient corresponds to. For example, in the restricted model, a unit increase in 'Intent' yields a $6,002.00 increase in the size of the aggregate penalty. The units of 'Intent' are as follows: 0, no intent; 1, the defendant knew what he or she was doing; 2, the defendant not only knew what he or she was doing but did so with the view to profit; 3, the same for 2 except the defendant deliberately evaded the Fair Trading Act. From the Commerce Commission's point of view, this value would be useful in assessing the size of the penalty to be expected for a given value of the variable. For example, if the Commission was able to prove to the judge that the defendant not only knew what he or she was doing but did so with the view to profit, they could expect this to increase the size of the penalty by around $12,000.00. The accuracy of the regression coefficients, however, depends on the degree to which they vary for different observations. This variation is measured by the standard error of the regression coefficient.

Standard Errors of the Regression Coefficients

Unfortunately, the standard errors of the coefficients in the Shazam output are of the normalised coefficients rather than the regression coefficients. This means that their interpretation does not tell us anything about the variation of the regression coefficients. For this reason they are not included in the chart above. They do, however, indicate which of the coefficients are significantly different from zero. The t-statistics, therefore, are still relevant despite the fact that the standard errors of the normalised coefficients are used to calculate them.

As with the standard error of the estimate, the standard error of the regression coefficient would usually tell us the average deviation of the coefficient about its mean. The lower the standard error, the better. High standard errors indicate that there is considerable variation in the value of the coefficient, and therefore in the accuracy of the variable in explaining movement in the aggregate penalty. A high standard error erodes the predictability of the model.

T-Statistics

The t-statistics, which are recorded in brackets in table 3, tell us the *individual* significance of each of the variables in the regression. A t-statistic that is significant indicates that the regression coefficient of a variable is sufficiently different from zero to explain some of the variation in the size of the dependent variable.

In the unrestricted model, **'Number of Informations'**, **'Intent'** and **'Previous Offences'** are individually significant at a 5% level of significance. This means that the probability of rejecting the null hypothesis, that any one of these variables does not individually explain variation in the aggregate penalty, when it is true, is less than 5%. **'Financial Prejudice to Consumers'** is also individually significant at 10% significance. The model is *jointly* significant at a 5% level of significance. This means that even though the other variables in the unrestricted model are not individually significant, as a block

they contribute to explaining the variation in the size of penalties. To this extent, interpretation of all variables is relevant.

In the restricted model, **'Number of Informations'**, **'CPI'**, **'Intent'**, and **'Previous Offences'** are individually significant at 5% significance. The **'Ability to Pay'** and **'Cooperation with the Commission'** are also significant at 10% significance. The model is also *jointly* significant at a 5% level of significance.

Explanation of the Statistical Significance of the Restricted Model

Each of the individually significant variables in the restricted model is explained in turn.

'Number of Informations'

The significance of the 'Number of Informations' is not surprising. It could be hypothesised that the Commission uses the number of informations as a means of increasing the aggregate penalty requested. The regression coefficient for this variable is positive, as expected. It indicates that an increase in the number of informations by one information is correlated with a $1,107.40 increase in the size of the aggregate penalty. In terms of the theory of optimal judicial sentencing, however, the significance of this variable is less apparent.

Even if the Commission uses informations to gain leverage over the size of the penalty, it is difficult to justify judicial acquiescence, albeit unconsciously, on the grounds of optimality. It could be argued that the variable is interpreted by judges as a proxy for the extent of the breach: the larger the number of breaches, the larger the number of informations. This is certainly supported by the fact that each information represents either a different fact situation, section of the Act, or defendant. Whether or not the Commission's use of informations in this manner supports such a systematic interpretation is questionable. The Commission may choose to use one information as a representative breach or, alternatively, it may use as many informations as possible to guarantee a conviction or higher penalty. To the extent that it does, however, the variable is in the class of optimal considerations.

'CPI'

The significance of the 'CPI' as an explanatory variable, and the fact that it has a positive coefficient, is also not surprising. Over time one would expect that fines would be maintained in real terms and our fine data have not been adjusted for inflation. There has clearly been an upward trend in the size of the aggregate fines since the Act came into force. The statistical significance of the 'CPI' is evidence that this trend exists. The size of the coefficient indicates that a 1% increase in the rate of inflation is correlated with a 4.96% increase in the real value of fines. 'CPI', therefore, accounts for more than just the maintenance of the real value of fines; the variable must be capturing some other component of the time trend in the size of penalties under the Act. It should be noted that 'Date' was not a significant explanatory variable, which suggests that 'CPI' may be

capturing some of the effect of this variable. To find out exactly what this component is, however, would require further investigation. Possibilities could include: allowing defendants to come to grips with the legal requirements of the Act; growing judicial awareness of the importance of the Act in facilitating information flows; the increase in the legislative maxima for penalties under the equivalent Australian Trade Practices Act; and experience with the effect of previous enforcement under the Fair Trading Act.

To the extent that 'CPI' maintains real figures, however, 'CPI' is an optimal consideration.

'Intent'

The regression coefficient for 'Intent' is positive, as expected. The marginal effect of an increase in 'Intent' has already been discussed above. A unit increase in 'Intent' is correlated with a $6,002.00 increase in the size of the aggregate penalty.

Legally, the significance of 'Intent' is obvious. Its significance in terms of the theory of optimal judicial sentencing, on the other hand, requires some explanation.

Assuming full information, the theory of judicial sentencing presupposes the existence of intent. This is inherent in the assumption that criminals are rational utility maximisers: they think about the consequences of their action in advance. More specifically, they only do something if the perceived or expected benefit of doing it exceeds the perceived or expected costs. Criminal action, therefore, must demonstrate an intention to commit a crime. This intention, in turn, implies an incentive or 'profit' exists for offending. To this extent, the theory suggests that there is a potential for re-offending, and the potential for similar offending by others.

One of the principal objectives of punishing criminal offenders is deterrence. Punishment increases the perceived costs of criminal activity: an individual will re-offend less and the potential for offending by others is diminished if there is some likelihood of punishment. In this respect, judicial sentencing is about providing the right incentives to individuals.

Why, then, is 'Intent' an optimal consideration if the mere fact of criminal activity indicates intent?

At best, criminals, and indeed all individuals, can only maximise their *expected* utility. Without the assumption of full information, this leaves open the possibility for *unintended* action. Imposing harsh penalties for unintended illegal action, however, may have the effect of deterring non-criminal activity. Even if criminal activities are socially valuable, social resources are still used in their detection and conviction, albeit not in their punishment. Given that the objective of the judge, in the theory of optimal judicial sentencing, is to maximise social welfare, this would seem to imply that 'Intent' is an optimal consideration. Furthermore, the optimal rationale for imposing a penalty, in the absence of criminal intent, is to raise the cost of making mistakes and thereby encourage

individuals to incur the cost of acquiring information. Without some consideration of the degree of intent, it is difficult to envisage how judges could provide correct incentives to individuals in determining the appropriate size of penalties.

'Previous Offences'

The regression coefficient for 'Previous Offences' is negative, contrary to what was expected. The existence of a previous offence is correlated with a $10,695.00 lower penalty. Because 'Previous Offences' is effectively a dummy variable for repeat offenders, it is relevant to look to the literature on repeat offenders for an explanation of the counter-intuitive result.

According to Garoupa, Polinksy and Shavell have argued that "it may be optimal to impose less severe penalties on repeat offenders."[32] In their most recent article, however, Polinsky and Shavell (2000) only argue that sanctioning of repeat offenders *more severely* cannot be socially optimal with optimal deterrence. In other words, if the sanction exactly equals the harm caused by the offence, and the offence is committed, the gain to offender must have exceeded the sanction. Social welfare therefore is higher as a result of the offending. Raising the sanction for repeat offending will over deter the offender, and consequently reduce social welfare. It is only optimal to raise the sanction for repeat offending if deterrence is inadequate (i.e. if there is under deterrence). Where offenders are cash constrained, as most of the offenders who breach the Fair Trading Act are likely to be, this will be the case. The theory, therefore, does not appear to support the negative regression coefficient for 'Previous Offences'.

An alternative theoretical explanation that does support the negative regression coefficient for 'Previous Offences' uses the conclusion that the severity of punishment (i.e. the level of the fine) for the same harm should be higher the lower is the probability of detection. If the Commission monitored previous offenders more stringently than non-offenders, then it would be efficient to reduce the fine for any particular event. This should also be the case if the prosecution costs fell with repeat offenders in that their previous record substituted for investigation.

Aside from a theoretical explanation, it is possible that the reason for the result is simply due to the quality of the data. On the one hand, there may not be enough concordance between the variable 'Previous Offences' and its theoretical counterpart (repeat offences): warnings, settlements and previous convictions were all taken into account in quantifying the 'Previous Offences'. On the other hand, there may not have been sufficient observations to generate enough variability between 'Previous Offences' and other variables in the study.

The sign of the coefficient may indicate, for instance, that there is some interaction (multicolinearity) between 'Previous Offences' and another variable, like 'Intent'. Where two independent variables are highly correlated with each other, it is not unusual for the coefficient of one of the variables to have the wrong sign, or to be insignificant.

[32] Garoupa (1968) p 278.

'Previous Offences' could be correlated with 'Intent' or 'Date'. A previous offence would provide reasonably strong affirmation that the offender intended to breach the Act. It is possible that if there were only a few cases in which both factors were present, 'Intent' may account for the effect of both. Perhaps more plausible, however, is that this variable is time related, and therefore correlated with 'Date'. This may explain the perverse sign of 'Previous Offences'.[33] Over time, people have more of an opportunity to repeat offend under the Act, and therefore it is possible that 'Previous Offences' is highly correlated with time. It is likely also that Courts treat previous offences under the same Act more seriously than offences under different Acts. Whichever scenario, it is likely that the current coefficient on 'Previous Offences' does not reveal anything does not demonstrate the nature of any robust relationship between the variable on the size of the aggregate penalty.

'Ability to Pay'

In terms of the theory of judicial sentencing, 'Ability to Pay' is clearly an optimal consideration. It is a proxy for the idea that wealth varies among individuals, which is an additional variable in Garoupa's model. The regression coefficient for 'Ability to Pay' is strongly positive, as expected. A unit increase in the defendant's ability to pay is correlated with a $4,182.40 increase in the aggregate penalty.

'Cooperation with the Commission'

'Cooperation with the Commission' is also an optimal consideration. It represents a proxy for the cost to society of detection and conviction, which is a basic variable in the model of optimal penalties. The coefficient for this variable is negative, as expected. A unit increase in Cooperation is correlated with a $2,996.80 decrease in the aggregate penalty.

[33] Multicolinearity between 'Previous Offences' and 'Date' was not tested.

VII. CONCLUSION

In this study, the economic theory of optimal penalties was applied to judicial sentencing under the Fair Trading Act 1986. By applying the theory to judicial sentencing, judges are assumed to be rational, welfare-maximising decision makers. In sentencing, they only take account of factors that maximise net social welfare. These factors are taken directly from the model of optimal penalties.

Data quantified from 84 Act cases were applied to an econometric model that incorporated variables approximating these "optimality considerations". The aim was to test the ability of this model to explain the average variation in the size of the penalties awarded under the Act.

The econometric analysis revealed that several of the optimality considerations are statistically significant in determining the variation in the size of penalties under the Act. However, optimality considerations do not explain all the variation in the size of the penalties. In constructing the model, some non-optimality considerations had to be included, as their omission would have invalidated the results. In addition, some optimality considerations were not included in the model because they could not be quantified.

The individual optimality considerations that were statistically significant were 'Intent', 'Previous Offences', 'CPI', 'Ability to Pay', and 'Cooperation with the Commerce Commission'. The regression coefficients on these variables show that, all other things being equal, a unit increase in 'Intent' increased the aggregate penalty by $6,002.00, a unit increase in 'Previous Offences' decreased the penalty by $10,695.00, a unit increase in the 'CPI' increased the aggregate penalty by $75.27, a unit increase in the 'Ability of the Defendant to Pay' increased the penalty by $4,182.40, and a unit increase in 'Cooperation with the Commission' decreased the aggregate penalty by $2,996.80. The negative correlation of 'Previous Offences' with the size of the aggregate penalty is the only inconsistent result in the study.

The 'Number of Informations' is, arguably, the only individually significant, non-optimal consideration. The regression coefficient on this variable shows that, all other things being equal, an extra information will increase the aggregate penalty by $1,107.40.

These results indicate that, if the Commission wants higher aggregate penalties, it should concentrate on cases with intent, where the defendant has the ability to pay, and it should increase the number of informations. Alternatively, it should not pursue cases where the defendant has cooperated with the Commission.

The significance of 'CPI', and the significance but controversial sign of 'Previous Offences', also suggest that time has an important effect on the size of the penalties awarded under the Act. While the Commission can do little about this directly, some further work may reveal, for instance, that over time Courts develop an awareness of the

importance of the Act in facilitating information flows. The Commission may then be able to adopt a more pro-active role in developing this awareness.

Finally, and perhaps most importantly, the results of this study indicate that there is a reasonable degree of consistency of judicial sentencing under the Fair Trading Act. More than 50% of the size of penalties awarded under the Act is explained by "optimality considerations". The rest is either explained by other considerations for which there were no data, or they are arbitrary.

APPENDIX A: ENFORCEMENT CRITERIA[1]

Investigation Criteria

1. **Major Market Problem**
   Includes:
   - conduct that may adversely affect a large proportion of consumers or traders in a significant market;
   - widespread advertising;
   - a current Commission target issue or industry;
   - conduct of several traders or which is an industry practice;
   - a breach of a product safety standard.

2. **Blatant Disregard for the Law**
   Includes:
   - previous enforcement action against the trader;
   - ongoing course of conduct;
   - prima facie evidence of deliberate deception;
   - consumers do not realise that they have been detrimentally affected;
   - a court precedent has been breached.

3. **Precedent**
   Includes matters where a successful prosecution could result in:
   - setting a new legal precedent;
   - clarifying an existing legal precedent;
   - extending an existing precedent;
   - changing an unworkable legal precedent.

Factors to consider in deciding whether it is appropriate for the Commission to investigate

- Whether the matter would be more appropriately dealt with by another organisation or by private action.
- Whether the Commission can deal with the matter practically and efficiently through enforcement action.
- Whether the likely outcome would justify investigation.

Enforcement Criteria

General criteria:

- What action is likely to result in lasting compliance?
- The extent of consumer and/or trader detriment.
- The enforcement history of the trader (previous warnings, settlements, or court action.)
- Previous Commission dealings with the industry.
- Precedent value.
- Educative or deterrent value.
- Whether there has been blatant disregard for the law.
- If a product safety issue is involved, how serious it is.
- Whether the trader has a compliance programme.
- Whether there is likely to be a defence available to the trader.

[1] *Investigation and Enforcement Criteria* (Fair Trading Division, Commerce Commission, August 1998.)

Specific criteria:

Warning
- The breach is not deliberate.
- The breach is an isolated incident.
- The breach is not significant enough to require a settlement or court action.

Settlement
- There is sufficient evidence to shoe that the Act has been breached.
- A real change in the trader's conduct can be effected.
- A better outcome in the particular market can be achieved through settlement than court action.
- The Commission is prepared to proceed to court action if the settlement negotiations are not successful.

  Staff settlement if the settlement or undertaking involves:
  - Staff training.
  - The introduction of compliance programme.
  - A product recall.
  - Admitting the breach.

  Commission settlement if:
  - A precedent is sought.
  - A trader has contravened the Act despite a previous warning or settlement.
  - A serious product safety issue is involved.
  - There has been blatant disregard of the law.
  - There is extensive detriment to consumers and/or other traders
  - A trader has refused to enter into a settlement.

Court Action
- Payment of Compensation is sought.
- Corrective advertising is sought.
- Publishment of an apology is sought.
- If the Commission is organising a seminar on the Fair Trading Act for the industry the trader is involved in.

Pursuant to:
- Section 40 of the Act where a conviction and imposition of a fine is sought.
- Section 41 of the Act where an injunction is sought to restrain continuing contravening conduct.
- Section 42 of the Act where an order for corrective advertising is sought.
- Section 43 of the Act where orders for compensation, return of property, repair, supply of services, or variation or cancellation of a contract are sought.

APPENDIX B: DATA COLLECTION AND SELECTION

A. Source

The data for this study was sourced from the Commerce Commission Fair Trading Act cases. Eighty-four cases were quantified for the study. These included most of the Commerce Commission cases brought under section 40 of the Fair Trading Act up to the end of 1998. Not all of the cases were available, or existed in written form. Some of the cases were not included in the study because either they were not completed or the Commission was still awaiting written judgments or sentencing remarks. All the cases included in the study are recorded in Appendix E.

No selection was involved with the cases. However, the cases that were available tended to be cases that were successful and had sentences awarded.

Only those cases that the Commission was party to are included in the study. No private cases are included.

B. Data Collection

The data collected for the study was limited to the obvious details of the cases: details such as the decision date, the judge, the court, the facts of the case and the factors the judge discussed in the written judgments and sentencing remarks. The general categorisations made for the facts of the case and the factors taken into account by judges were based loosely on the sentencing criteria developed by New Zealand Courts since the Act came into force on 1 March 1987. A great deal of this precedent was originally imported from Australian precedent (Part V Trade Practices Act 1974) by the New Zealand High Court in *Connell v LD Nathan*.[2] It has since formed the substantive basis of the Commerce Commission's penalty submissions. Information on sentencing criteria was gained from studying the Act itself, literature on penalties and the Act, discussions with Commerce Commission staff members and, in particular, Fair Trading Act cases.

C. Data Recording

Penalty was the dependent variable to be explained in the study. Both the aggregate penalty and the separate penalties were recorded for each case. Separate penalties are the penalties awarded in respect of each information[♦], where more than one information is successfully laid in a case.

Two techniques were used to quantify all of the possible explanatory variables.

1. Actual presence of variables

This technique records which of the variables are present in each case and, where possible, the extent to which they are present. The technique relies on the facts or findings of fact in each case. As a result, the technique generates a comprehensive set of variables that are capable of being interpreted independently of judicial reasoning.

Each variable is subjectively assigned a positive value between 0 and 3. The *general* categorisations are as follows:

0 – not a factor in the case, or not clear from the facts

[2] (1988) 3 TCLR 362.

[♦] An Information is an official document, issued by the Commission and filed with the appropriate Court (i.e., with the Jurisdiction to hear the case), alleging a breach of a section of the Fair Trading Act. The document is served to the defendant.

1 – minor factor
2 – moderate factor
3 – major factor

What constitutes a minor, moderate, or major factor depends on the particular variable. The *specific* categorisations are outlined in Appendix C.

2. Judge selection and weighting of variables

This technique weights the relative importance each judge attached to the hypothesised variables when sentencing.

Each variable is subjectively assigned an absolute value between 0 and 3. The categorisations are as follows:

0 – not a variable explicitly taken into account by the judge
1 – variable mentioned by judge without emphasis
2 – some emphasis
3 – lot of emphasis, often a statement that a factor is an important mitigating or aggravating factor, or the principle reason for the size of the penalty

In addition, this technique records whether the judge considered that the variables aggravated or mitigated the sentence. Aggravating factors are indicated by negative signs and mitigating factors by positive signs.

E. Data Selection

Not all the data were used for the study. The data that were used included the statistical data and the data quantified using the first data recording technique. The second technique does not produce data useful for an econometric study of the factors affecting the size of penalties under the Fair Trading Act.

Judicial weightings were not used as explanatory variables. If they had been used, this would have tested the extent to which the sentencing remarks bore any relation to the size of the sentence, not the importance of factors in the size of penalties. In this study, the relation between the factors present in the case and the size of the penalty was examined, rather than the judge's interpretation of those factors.

Not all of the statistical data and data quantified using the first technique were used for the study. The data that were not included and the reasons for their omission are explained in the remaining paragraphs.

'Physical Harm' and 'Pre-Sentencing Prejudicial Behaviour' were intentionally omitted from the study. There were no observations for the former using the first data recording technique and only one observation for the latter.

Other data excluded from the study were the per-information data. This included 'Penalties per Information', 'Section' and 'Defendant Type'. With more time, it would have been possible to expand the study so that the unexplained or dependent variable was the penalty for each information. This would have produced more observations, but may have distorted the results.[3]

[3] The per-information penalty would have produced an alternative set of data. The set of data would have been larger in the number of variables and the number of observations. The extra variables that would have been included have already been mentioned. In respect of the number of observations, more than one observation is available for some of the cases where different, and in some cases the same, penalties are awarded for different informations. Because each information is laid either in respect of a different defendant or a different section there is some factual difference between each information. This difference, however, was quantifiable in only a handful of cases. Moreover, in most of those cases there were only one or two variations between the information observations. Given that there are over 20 variables, this would mean that where more than one observation existed for a case, those observations would be virtually identical. This may have distorted the results in favour of the explanatory power of cases with more than one observation.

'Market Type' was also excluded from the study. This was done because each market would have to have been included as a dummy variable. There was no obvious theoretical or legal reason for looking at only a few markets and, given that there was not a great deal of overlap between the cases in terms of market, this would have involved a lot of dummies. There was also no rationale behind ranking them. (This was also the reason for excluding the variables: 'Judge' and 'Origin of Complaint'.) There was no obvious theoretical reason to spend time including and testing the significance of these dummies. In respect of the variable 'City', Christchurch was included as a dummy for the sake of interest. The highest penalties have tended to be awarded in Christchurch and Christchurch undertakes a large proportion of the Fair Trading Act cases. 'Court' was also left in the study to test the idea that the higher the court the less conservative the court will be in awarding penalties. (This theory supports ranking the variable 'Court' as 1 for district court, 2 for high court and 3 for court of appeal.)

Because judicial selection and weighting data were excluded, 'Deterrence' was automatically omitted from analysis. This variable was not recorded using the first data collection technique.

Warnings were included as 'Previous Offences', which is for all intents and purposes a dummy variable. The distinction between "2a"s and "2b"s (see Appendix C for quantification technique) was also omitted for the 'Consumer Prejudice' variables.

Including the maximum penalty was also problematic. In terms of the theory of optimal penalties, the maximum fine (F) is assumed to be represented by the legislative maxima in the Fair Trading Act. The problem with including the maximum fine, with only the aggregate data, was that each case or observation may involve more than one type of defendant (individual or body corporate) and therefore both maxima.

To resolve this problem, a dummy variable for 'Type of Defendant' was included, to represent factors including the maxima: 0 represented cases brought solely against individuals and 1 represented cases brought against either body corporates or both body corporates and individuals. In cases against individuals, the maximum fine is $30,000. In cases against companies or both individuals and companies, the maximum fine is $100,000. This abstracts from the fact that, where both types of defendants are the subject of a case, a separate fine will be levied against each, if each is convicted and not discharged, and the maxima in respect of each is different. This method of including the maxima also abstracts from section 40(2) of the Act. Section 40(2) states that where more than one information is brought against a defendant, the maxima may or may not apply in respect of *each* information. Number of Informations captures both sections and defendant differentials, but this does not necessarily mean that section 40(2) is applicable. Whether section 40(2) was applied or not was not recorded in respect of each case.

Retrospectively, not enough data were collected, or collected with sufficient precision for the study. The number of complainants would have allowed the utilisation of the 'Origin of Complaint' variable in the study. Effort to 'Correct the Breach' would have been more useful if it were decomposed into the cost of correcting the breach and the cost of preventing further breaches.

APPENDIX D: APPROXIMATIONS OF "OPTIMAL CONSIDERATIONS"

Benefit to offender (b)

1 **Incidental profit**

This is the direct financial return to the defendant from the breach - ***whether the breach was intended or not.***

2 **Effort to correct the breach**

The defendant may, voluntarily, incur costs to correct the damage done by the breach, or to prevent the breach reccuring. Theses are criminal costs internalised by the defendant. To this exteht they should be taken into account in calculating the ***net benefit*** *to the defendant of commiting the breach. Ideally, the costs of correcting the breach and the costs of preventing further breaches should be separated. The cost of preventing further breaches really falls under the severity of the penalty. Unfortunately, the measurement of the variable prevents this separation.*

b = 1 - 2

Issue: Whether this variable is ex-ante, actual or ex-post will affect the approximation.

Ex-ante: *the benefit to the offender refers the intended benefit to the offender, ie the benefit before the criminal act was executed. This seems to fit better with the theory which implies criminal activity is meditated: the individual is a rational economic decision maker - this implies full information. If this is the case, 1 will need to be qualified by* ***intent****.*

Actual: *the benefit to the offender refers to the actual benefit to the offender. This means that 1 is relevant but 2 is not.*

Ex-post: *the benefit to the offender refers to the actual benefit less any costs of remedying the breach and/or preventing further breaches.*

Harm to society (h)

1 **Freedom of choice prejudice to consumers**

One type of harm to consumers.

2 **Financial prejudice**

Another type of harm to consumers.

3 **Safety prejudice**

Another type of harm to consumers.

4 ~~**Physical harm prejudice**~~

~~*Another type of harm to consumers.*~~

NB: this variable has no positive observations

5 **Prejudice to producers**

Financial harm to competitive traders.

6 ~~**Degree of disemmination**~~

~~***Potential*** *harm to consumers resulting from the breach.*~~

NB: this variable was not collected using the first data collection technique.

7 **Extent of departure from the truth**

Inherent in the amount of harm done to consumers.

8 **Extent of breach**

Inherent in the amount of harm done to consumers.

h = 1 + 2 + 3 + 4 + 5

h = 1(8, 9) + 2 (8, 9) + 3 (8, 9) + 4(8, 9) + 5

h = [6 - (1 + 2 + 3 + 4)] + 5

Issue: whether harm to society refers to actual harm or potential harm will have to be clarrified.

Actual: *1, 2, 3, 4, 5 are relevant.*

Potential: *1, 2, 3, 4, 5 are irrelevant.*

Cost to society of detection and conviction (c)

1 **?**
No obvious proxy for this variable.

2 **Guilty plea**
Guilty pleas reduce the cost of conviction.

3 **Cooperation with Commission**
Cooperation reduces the cost of detection.

c = 1 - 2 - 3

Severity of punishment (f)

1 **Aggreagate penalty OR penalty per info/charge**

2 **Other sanctions**
Penalties are the only form of sanctions allowed in the Act. Courts do, however, take account of whether compensation orders were made, whether there was particularly bad publicity, ore simply whether the defendant voluntarily incurred costs in mitigating the effect of the breach It could be argued, therefore, that these 'other' sanctions are a form of penalty - they could be used to calculate an imputed penalty.

f = 1 + 2

Issue: are courts a sufficient substitue for the social planner?

Maximum wealth of individuals (F)

1 **Maximum fines under section 40(1) FTA**
The maximum fines provided in the FTA clearly do not represent the maximum wealth of the individuals.

F = 1

Probability of detection and conviction (p)

1 **?** *No obvious proxy for this variable.*

The probability of conviction can easily be estimated using Commission data.

The probability of detection is problematic - the Commission may have some estimate.

Data with no apparent relation to optimal penalty theory

Number of informations
Number of informations per section
Date
Court
City
Judge
Penalty submissions

Additional "Optimal Considerations":

Conspiracy/organised crime. Garoupa notes that a weakness of the model is that it is not characterised by strategic behaviour or interdependant behaviour. P 287

Marginal deterrence. Polinsky and Rubinfeld: It may be less optimal to impose *less* severe penalties on repeat offenders. P 278

Marginal deterrence. The sanctioning system must ensure that individuals, when faced with commiting several harmful acts, have clear incentives to choose the least harmful. P 277

Wealth varies among individuals.

Sanctions are socially costly. There may exist social costs from the imposition of penalties.

Characteristics of the defendant.

Data approximations:

Influence of others

Previous offences
Premature prejudicial behaviour by Commission towards

Section of Act

Ability to pay

Other sanctions

Intent
Negligence
Public status
Type of defendant
Market/Market share

APPENDIX E: RAW DATA

■ = Judges' weightings
Y/N = Actual presence of variables in case

	FTA Cases	Dependent Variables		Independent Variables											
Reported		Penalty		C/I/B	Section penalty imposed on	# Infos per section	# Infos penalties imposed on	Date	Court	City	Judge	Intent		Negligence	
		Aggregate	Per Charge									Y/N	■	Y/N	■
R(P)	8/Gall	$750.00	$750.00	I	13(g)	1	1	4/20/88	DC	Chch	Fraser	1	0	N	0
R(P)	14/Sitmar	$5,000.00	$5,000.00	C	13(g)	1	1	10/25/88	DC	Auck	Elliott	2	-2	N	0
R(P)	32/Rikstay	$2,000.00	$1,000.00	C	13(a)	2	2	8/23/89	DC	Chch	Kean	1	-2	N	0
R(P)	35/Sunfrost	$2,500.00	$2,500.00	C	13(i)	1	1	9/20/89	DC	Auck	Elliott	1	-1	1	-1
U(NW)(P)F	22/Lanes	$7,200.00	$400.00	C	13(g)	18	18	3/13/89	DC	Chch	Holderness	N	0	2	0
(A)R(P)	23/Lanes	$7,200.00	$400.00	C	13(g)	18	18	6/8/89	HC	Chch	Tipping	N	0	2	-3
(A)R(P)	4/LD Nathan	$3,000.00	$1,500.00	C	29(4)	1	2	8/18/88	HC	Wgtn	Grieg	N	2	2	-2
			$1,500.00		13(a)	1									
(A)R(P)	5/Farmers(Wgtn)	$5,000.00	$1,250.00	C	29(4)	2	4	8/18/88	HC	Wgtn	Grieg	N	2	2	-2
			$1,250.00		13(a)	2									
U(W)(P)	10/Farmers(Auck)	$26,000.00	$2,000.00	C	13(i)	1	4	7/26/88	DC	Auck	Gallander	N	2	2	0
			$8,000.00			3									
(A)R(P)	11/Farmers(Auck)	$26,000.00	$2,000.00	C	13(i)	1	4	10/7/88	HC	Auck	Hillyer	N	0	2	-3
			$8,000.00			3									
R(P)	54/Old Sydneham Jewellers	$200.00	$100.00	C	13(a)	2	2	3/13/90	DC	Chch	Green	1	0	N	0
R(P)	40/Amark	$4,900.00	$400.00	C	13(f)	1	3	11/15/89	DC	Chch	Erber	2	-2	N	0
			$2,000.00		13(e)	1									
			$2,500.00		13(f)	1									
R(P)	55/James	$400.00	$200.00	C	13(e)	1	2	4/27/90	DC	Dunedin	Willy		0		0
			$200.00	I	22(1)	1									
U(P)	102/Egil	$4,800.00	$200.00	I		24	24	12/18/91	DC	Chch	Bisphan		0		0
U(W)(P)	97/Fletcher Merchants	$2,750.00	$750.00	C	13(g)	1	3	7/17/91	DC	Wgtn	Kerr	N	0	2	3
			$1,000.00			1									
			$1,000.00			1									
U(W)(P)	52/Lee	$100.00	$100.00	I	13(a)	1	1	12/13/90	DC	Chch	Holderness	N	0	1	-1
(A)R(P)	57/M.A.T	$1,000.00	$250.00	C	13(g)	4	4	5/31/90	HC	Chch	Williamson				
U(P)F	104/Cummings	$600.00	$150.00	I	13(a)	2	4	2/3/92	DC	Chch	Noble	2	-2	N	0
			$150.00		13(g)	2									
U(W)(P)	109/Dutch	$46,500.00	$6,000.00	C	13(b)/22(1)	6	12	2/24/92	DC	Auck	Elliott	3	-3	N	0
			$1,750.00	I	13(b)/22(1)	6									
(A)(U)(P)	110/Wynotts	$3,900.00	$650.00	I	13(b)/22(1)	6	6	7/13/92	HC	Auck	Fisher	3	-3	N	0
U(P)	72/Crescent	$10,800.00	$600.00	C	13(g)	18	18	8/27/90	DC	Chch	Bisphan	2	-2	N	0
(A)U(P)	38/Inger("Warehouse")	$1,000.00	$1,000.00	I	13(a)	1	1	2/20/90	HC	Auck	Wylie	0	2	2	0
(A)U(P)	42/Brixton	$1,500.00	$750.00	C	13(a)	2	2	2/20/90	HC	Chch	Holland	N	0	3	0
U(W)(P)	233/ANZ	$16,000.00	$4,000.00	C	13(g)	1	3	2/13/96	DC	Wgtn	Ongley	1	-1	1	-1
			$8,000.00	C	11	1									
			$4,000.00	C	11	1									
U(P)	249/Bank Shoes	$3,000.00	$1,000.00	C	27(4)	3	3	7/22/96	DC	Lower Hutt	Keane	N	0	2	-1
U(P)	246/ Bond	$63,000.00	$63,000.00	C	13(g)	1	1	5/7/97	DC	Chch	Green	2	-3	2	-2
U(W)(P)	423/Edge	$50,000.00	$50,000.00	C	10	1	1	2/20/97	DC	Wgtn	Borrin	2	-2	N	0
U(W)(P)	229/ Mt Albert TV	$3,500.00	$3,500.00	C	13(g)	1	1	12/1/95	DC	Auck	Roderick Joyce	N	1		-2
U(P)	232/Rural	$20,000.00	$7,500.00	C	14(1)(b)	2	4	9/27/95	DC	Chch	Holderness	2	-2	N	1
			$2,500.00	I	14(1)(b)	2									
U(P)	130/Hughes	$20,000.00	$5,000.00	C	13(a)	2	4	12/11/92	DC	Invercargill	Hay				
			$5,000.00	I	13(a)	2									
U(W)(P)	243/Kapiti	$8,000.00	$6,000.00	C	13(g)	1	2	5/17/96	DC	Wgtn	Becroft	N	1	2	-3
			$2,000.00	C	13(I)	1									-2
U(P)	446/Prudential	$23,000.00	$5,000.00	C	12	3	7	8/4/97	DC	Chch	Costigan	N	0	2	0
			$1,000.00			2									
			$3,000.00			2									
(W)(P)	455/Leo Van Dijk	$10,000.00	$10,000.00	I	24	1	1	7/23/97	DC	Chch	Kean	2	-2	N	0
(A)(W)(P)	474/Leo	$10,000.00	$10,000.00	I	24	1	1	11/27/97	HC	Chch	Hansen	2	0	N	0
(W)(P)	231/Weatherall	$28,000.00	$20,000.00	C	13(g)	1	3	5/30/96	DC	Dunedin	Everitt	2	-3	N	0
			$5,000.00	I		1									
			$3,000.00	I		1									
(W)(P)	294/Cole Myres	$25,000.00	$7,500.00	C	29(4)	1	3	2/21/96	DC	Auck	Imrie	N	1	3	-3
			$7,500.00			1									
			$10,000.00			1									
R(NP)	17/A&W Hamilton	$500.00	$500.00	C	10	1	1	1/31/89	DC	Chch	Bisphan				
U(NP)F	121/Alister Robb	$500.00	$500.00	I	13(e)	1	1	7/13/92	DC	Wgtn	Unwin	N	2	2	-2
U(P)	133/Alsam	$15,000.00	$3,000.00	C	29(4)	5	5	8/11/93	DC	Auck	Cadenhead	N	0		0
U(W)(NP)	204/Amark	$600.00	$300.00	C	13(a)	2	2	2/17/93	DC	Chch	Hattaway				
U(NP)F	256/Bayview	$600.00	$600.00	C	13(a)	1	1	9/4/95	DC	Palmerston North	Lovegrove	N	1	1	-1
U(W)(P)	440/Ben Rumble	$8,000.00	$2,000.00	B	13(I)	2	4	8/19/97	DC	Chch	Doherty	N	2	1	-2
				C	13(j)	2									
U(NP)F	250/Butlers	$1,000.00	$1,000.00	C	27(4)	1	1	11/8/95	DC	Auck	Young	3	0	N	0
U(NP)F	112/Jap an save	$13,000.00	$2,000.00	C	13(a)	1	4	3/25/92	DC	Henderson	Dehobakta	2	-2	N	0
			$4,000.00		13(d)	2									
			$3,000.00		13(d)	1									
R(NP)F	148/Callaghan	$2,000.00	$400.00	I	14(1)(b)	5	5	2/18/93	DC	Queenstown	Neal	1	-1	N	0
U(NP)F	146/DN Govan	$0.00	$0.00	C	13(g)	4	4	11/29/90	DC	Wgtn	Middleton	N	0	N	0
U(NP)F	115/Bedford	$3,500.00	$500.00	I	13(b)	7	7	5/13/92	DC	Auck	Callendar	1	0	N	0
U(W)(P)	113/Gibson	$7,500.00	$7,500.00	I	11	1	1	8/2/09	DC	Chch	Erber	2	-3	N	0
(A)U(W)(P)	116/Gibson	$7,500.00	$7,500.00	I	11	1	1	2/2/96	DC	Chch	Fraser	2	0	N	0
Appeal dismissed, not good data															
U(W)(NP)F	129/Cadell	$1,500.00	$750.00	I	22(2)(b)	2	2	6/15/92	DC	Auck	Cadenhead	1	-1	0	0
U(P)	149/Deka	$4,000.00	$4,000.00	C	29(4)	1	1	10/5/94	DC	Auck	Bollard	0	1	1	-1
U(NP)F	153/Don Grindley	$6,000.00	$1,000.00	C	13(g)	3	6	5/16/94	DC	Chch	Erber		0		0
						3									
U(NP)F	154/East Coast Credit Control	$2,300.00	2000	C	13(I)	1	2	10/6/94	DC	Chch	Strettel				
			300	I		1									

FTA Cases Cont.	Independent Variables Cont.																									
	Consumer Prejudice								Producer Prejudice		Efforts to Correct Breach		Deterrence	Incidental Profit		Ability to Pay		Guilty Plea		Previous Offences		Co-operation with Commission		Degree of Dissemination	
	Freedom of Choic		Cost/ Financial		Safety		Harm		Y/N	■	Y/N	■	■	Y/N	■	Y/N	■	Y/N	■	#/Type	■	Y/N	■	Y/N	■
	Y/N	■	Y/N	■	Y/N	■	Y/N	■																		
8/Gall	2a	0	1	0	N	0	N	0	1	0		0	0	1	0	1	2	N	0	0	0		0	1	0
14/Sitmar	2a	-1	2a	-2	N	1	N	0	0	1	2	2	0	2	0	2	0	N	0	0	1	1	1	1	0
32/Rikstay	3	-3	1	1	N	0	N	0	1	0	1	1	-2	1	-1	2	1	Y	2	0	1	2	1	2	0
35/Sunfrost	2b	-3	1	0	N	1	N	1	2	0	2	1	0	1	2	2	0	Y	1	0	1		0	2	2
22/Lanes	3	0	0	-1	N	2	N	0	2	0	2	0	0	2	0	2	0	Y	2	0	0	2	2	2	0
23/Lanes	3	-3	0	0	N	0	N	0	2	-1	2	1	-2	2	0	2	-1	Y	0	0	0	2	1	2	-2
4/LD Nathan	2a	0	1	0	2	-2	N	1	2	0	3	3	-1	1	0	2	0	Y	0	0	2		0	1	1
5/Farmers(Wgtn)	2a	0	1	0	2	-2	N	1	2	0	3	3	-1	1	0	2	0	Y	0	0	2		0	1	1
10/Farmers(Auck)	2a	-2	1	0	N	0	N	0	1	0	N/2	-3/2	-2	2	0	2	0	Y	0	0	0		0	1	1
11/Farmers(Auck)	2a	0	1	0	N	0	N	0	1	0	N/2	0	0	2	0	2	0	Y	0	0	0		0	1	0
54/Old Sydneham Jewellers	2a	0	2a	-2	N	0	N	0	1	0		0	0	2	0	1	3	N	0	0	0		0	1	0
40/Amark	2a	-2	0	3	N	0	N	0	2	0	1	1	0	2	0	2	0	N	0	0	0	1	0	1	-1
																								2	
																								2	
55/James	2b	0	2b	0	N	0	N	0	0	0	N	0	0	2	0	s82SPA	3	Y	0	0	0	N	0	2	0
102/Egil		1		-2	N	0	N	0	0	0		0	0		0	1	3	Y	2	0	0	2	2	1	0
97/Fletcher Merchants	1	0	1	0	N	0	N	0	1	0	N/2	-1/1	0	1	0	2	0	Y	1	0	0	2	0	1	-2
52/Lee	2a	-2	N	2	N	0	N	0	2	0	2	3	0	1	0	1	0	N	0	0	1	2	2	2	-3
57/M.A.T																		N							
104/Cummings	2a	-1	2	0	N	0	N	0	0	0	N	0	0	2	0	1	2	Y	-1	0	1	1	-1	1	0
109/Dutch	3	-2	3	-2	N	0	N	0	0	0	1	-2	-1	3	-3	1	1	Y	2	0	2	1	0	3	-2
110/Wynotts	3	-2	3	-3	N	0	N	0	0	0	1	-2	-2	3	-3	1	3	Y	2	0	2	1	0	3	-1
72/Crescent	2a	-2	N	0	N	0	N	0	2	0	1	1	-2	2	1	1	2	Y	0		0		0	2	0
38/Inger("Warehouse")	3	2	0	2	N	0	N	0	2	0	3	2	0	N	2	2	0	Y	0	0	0	2	0	3	-1
42/Brixton	2a	0	2a	0	N	0	N	0	N	1	N	0	0	2	0	2	0	N	0	0	0	N	0	1	0
233/ANZ	3	-2	N	0	N	0	N	0	N	1	2	1	-2	2	0	3	0	Y	0	1	0	2	0	2	-2
																								3	
																								3	
249/Bank Shoes	1	-2	0	0	N	0	N	0	0	0	1	-1	-2		0	2	-1	N	0	1	0	1	-1	1	0
246/ Bond	3	-2	0	0	N	0	N	0	3	0	2	1	-2		0	3	-2	Y	1	0	2	2	2	3	-3
423/Edge	3	-2		0	N	0	N	0	2	-2	2	1	-3		0	3	0	Y	2	0	1		0	1	0
229/ Mt Albert TV		-3		-3	N	0	N	0	3	-1	2	2	-2		0	2	0	N	1	0	1		0	3	-2
232/Rural	2a	-2	2a	-2	N	0	N	0	2	0	1	1	0	2	0	2	0	N	0	0	0		0	2	0
130/Hughes																		Y							
243/Kapiti	1	-2	2a	-2	N	0	N	0	0	0	1	0	-2	2	0	2	1	Y	0	0	1	2	1	1	1
446/Prudential	1	-2	N	0	N	0	N	0	0	0	2	1	-1	1	0	2	0	Y	2	0	0		0	2	0
455/Leo Van Dijk	2b	0	2b	-1	N	0	N	0	0	0	N	0	-2	3	-2	2	-2	N	0	1	-1	1	1	2	-2
474/Leo	2b	0	2b	0	N	0	N	0	0	0	N	0	0	3	0	2	0	N	0	1	0	1	0	2	-1
231/Weatherall	3	-2	2	0	N	0	N	0	0	0	N	-1	0	1	0	2	0	N	-1	0	1	1	1	2	-1
294/Cole Myres	2a	0	2a	0	2	-2	N	0	1	0	2	2	-1	1	0	3	-1	Y	0	1	0	2	0	1	0
						-2																			
						-3																			
17/A&W Hamilton	2a		N		N		N		1	0	Y					Y		N						2	
121/Alister Robb	N	1	1	0	N	0	N	0	0	0	2	-1	-1	N	1		0	Y	1	0	1		0	3	-1
133/Alsam	3	-2	2a	0	2	-3	N	0	1	0	3	2	-2			2	1	Y	1	0	1		0	2	-1
204/Amark	2a	0			N		N		2									N						2	
256/Bayview	1	0	1	0	N	0	N	0	1	0		0	-1	N		1	2	Y	1	0	1	2	1	1	0
440/Ben Rumble	3	0	1	0	N	0	N	0		0		0	0		0		0	N	0		0	1	0	3	-2
250/Butlers	2a	0	N	0	N	0	N	0	N	0	2	2	0	N	0	2	0	Y	1	1	-2	2	2	1	0
112/Jap an save	2a	0	2a	0	N	0	N	0	2	0	N	-2	0	2	0		0	Y	0		0		0	1	
148/Callaghan	1	0	2	0	N	0	N	0	N	0		0	-1		0	1	-3	N	0		0		0	1	0
146/DN Govan	N	0	N	0	N	0	N	0	N	0	N	0	0	N	0		0	Y	0		0		0	1	0
115/Bedford	1	0	2a	2	N	0	N	0	1	0		0	-1			0	3	Y	0	N	1		0	2	0
113/Gibson	2b	-2	2b	0	N	0	N	0	N	0	N	0	-2	2	-1	1	1	N	0		0		0	2	0
116/Gibson	2b	0	2b	0	N	0	N	0	N	0	N	0	0	2	0	1	ir appeal	N	0		0		0	2	0
129/Cadell	1	-1	2a	-2	N	0	N	0	N	0	N	0	0	1	0	2	-2	N	-1		0	1	-2	1	0
149/Deka	2b	0	N	0	2	-2	N	0	N	0	2	2	-1	N	0	2	-2	Y	0	1	-2		0	11	0
153/Don Grindley	2a	-3	2b	0	N	0	N	0	2	0		0	0	2	-2	2	0	Y	1		0		0	2	0
154/East Coast Credit Control																									

FTA Cases Cont.	Independent Variables Cont.																		
	Market			Penalty submissions relied on	Influence of Others		Pre-sentencing Prejudicial Behaviour		Public Status		Other Sanctions		Origin of Complaint		Extent of departure from truth		Extent of breach		Max
		share	■	Y/N	Y/N	■	Y/N	■	Y/N	■	Y/N What?	■	CC/ Cust/ Trader	■	Y/N	■	Y/N	■	
8/Gall	Photos	1		N	N	0	N	0	1	0	Liability for Reparation	1	C	0	3	-2	3	-2	Y
14/Sitmar	Cruises (Australia)	3		N	N	0	N	0	2	-1	N	0	C	0	3	0	1	0	Y
32/Rikstav	Petrol Services	1		Y	N	0	N	0	1	0	N	0	T	0	3	0	3	0	Y
35/Sunfrost	Canned Tomatoes	1		Y	N	0	N	0	1	0	N	0	C	0	3	0	3	0	N
22/Lanes	Appliance Centre	2		Y	Y	0	N	0	2	0	N	0	T	0	3	0	2	2	Y
23/Lanes	Appliance Centre	2		Y	Y	1	N	0	2	0	N	0	T	0	3	0	2	2	Y
4/LD Nathan	Dept. Store	2		Y	Y	1	N	0	3	-3	Fact of conviction and publicity so far	3	CC	0	3	0	1	0	Y
5/Farmers(Wgtn)	Dept. Store	2		Y	Y	1	N	0	3	-3	Fact of conviction and publicity so far	3	CC	0	3	0	1	0	Y
10/Farmers(Auck)	Dept. Store	2		Y	Y	0	N	0	3	0	N	0	T	0	3	0	1	0	Y
11/Farmers(Auck)	Dept. Store	2		Y	Y	0	N	0	3	0	N	0	T	0	3	0	1	0	Y
54/Old Sydneham Jewellers	Antique Jewellery	1		N	N	0	N	0	1	0	Compensation $1,030 (s43), $510 Aust airfare.	0	C	0	3	0	0	0	N
40/Amark	Publishing/Advertising Space	1		Y	Y	3	N	0	2	0	N	0	ertisers)	0	3	-2	3	0	N
					N	0									2	-2			
					N	0									3	-3			
55/James	Glass cleaner franchise and sales	1		N	N	0	N	0	1	0	Compensation (2xs42) $12,000; $3,200.	0	C	0	3	0	3	0	
102/Egil	Soft Toy Manufacturers	1		N	Y	1	N	0	1	0	Compensation $5000 + Solicitors fee $1000	2	C	0	3	-3	2	0	N
97/Fletcher Merchants	Hardware	2		Y	N	0	N	0	3	0	N	0	C	0	3	0	1	2	N
52/Lee	Firewood	1		Y	N	0	N	0	1	0	N	0	C	0	3	0	1	1	N
57/M.A.T	Toys												C						
104/Cummings	Antiques	1		N	N	0	N	0	1	0	Reparation $1050	3	C	0	3	0	0	1	N
109/Dutch	Candles	1		Y	2	1	N	0	1	0	N	0	C	0	3	0	3	-2	Y
						2													
110/Wynotts	Candles	1		Y	2	1	N	0	1	0	N	0	C	0	3	0	3	-2	Y
72/Crescent	Jewellery	1		Y	N	0	N	0	2	0	N	0		0	3	0	1	0	N
38/Ingerl("Warehouse")	Dept. store	2		Y	N	0	N	0	3	0	N	0	T	0	3	0	1	2	Y
42/Brixton	Car sales (2nd hand)	1		N	N	0	N	0	1	0	Compensation $1200	0	C	0	3	0	0	0	N
233/ANZ	Banking (home lending)	3		Y	advice	1	N	0	3	0	N	0	CC	1	2	-2	3	0	N
																-3			
																-2			
249/Bank Shoes	Shoes	2		Y	N	0	N	0	3	-2	N	0	CC	0	2	0	1	2	Y
246/ Bond	Electronics	2		Y	N	0	s release)	2	3	-3	N	0	CC	0	3	0	3	-2	N
423/Edge	Computers	2		Y	2	2	N	0	2	0	N	0	C	0	3	0	3	0	N
229/ Mt Albert TV	Brownware	1	3	Y	N	0	N	0	2	0	Publicity	1	C	0	2	0	1	0	Y
232/Rural	Real Estate	1		Y	N	0	N	0	1	0	N	0	C	0	3	0	3	0	Y
130/Hughes													C						Y
243/Kapiti	Home building and real estate	1	2	Y	N	0	N	0	1	0	Publicity and compensation	2	C	0	2	-2	0	0	Y
446/Prudential	Insurance	2		Y	N	0	N	0	2	0	N	0	C	0	2	0	1	0	N
455/Leo Van Dijk	Pyramid Selling	1		Y	N	0	N	0	1	0	N	0	CC	0	1	0	3	0	Y
474/Leo	Pyramid selling	1		Y	N	0	N	0	1	0	N	0	CC	0	1	0	3	0	Y
231/Weatherall	Jewellers	1		Y	2	1	N	0	1	0	N	0	C	0	3	-2	3	0	Y
						2													
						1													
						3													
294/Cole Myres	Bikes	2		Y	N	0	N	0	3	-1	Solicitors fines and costs	1	CC	0	3	-1	1	1	N
17/A&W Hamilton	Retail/The Warehouse	2			N		N		2				T		2		1		N
121/Alister Robb	Advertising/Promoting	1		Y	N	0	N	0	1	0	N	0			2	0	1	0	N
133/Alsam	Toys	1			Y/dece	1	N	0	1	0	Y	1			2	0	1	1	N
204/Amark	Advertising advertising space	1			Y/certificate		N		1				T	2	2		1		N
256/Bayview	Fish Retailer	1		Y	N	0	N	0	1				T	1	3		1	1	N
440/Ben Rumble	Cellphones	2		Y	Y	2	N	0	3	0		0	CC	1	1	2	2	-2	Y
250/Butlers	Equestrian supplies	1				0		0	1	0	N	0		0	2	-2	3	0	N
112/Jap an save	Motor vehicles retail	1			Y	-1	N	0	1	0	Y/s43 compensation order $16,875.53	0	C	0	3	0	1	0	N
148/Callaghan	Timeshare	1		Y	Y/Cutv	1	N	0	1	0		0	C	0	3	-1	1	0	N
146/DN Govan	Clothes retailer	1			N	0	N	0	1	0		0	C		0	3	1	0	N
115/Bedford	Advertisement for film and theartre course	1				0	N	0	1	0	Y/compensation s 43 order $4 748.75	0	C	0	3	-2	2	0	
113/Gibson	Gameline	1		N	N	0	N	0	1	0	N	0	C	-1	3	-2		0	
116/Gibson	Gameline	1			N	0	N	0	1	0		0	c	-1	3	0			
129/Cadell	Franchises	1		Y	N	-2	N	0	1	0	Y/compensation $11800.00	3	C	0	3	0			
149/Deka	Nightclothes	2			N	0	N	0	3	-1	N	0	CC	0	0	1			
153/Don Grindley	Car parts	1		N	N	0	N	0	1	0	N	0		0	3	?			
154/East Coast Credit Control																			

	FTA Cases	Dependent Variables		Independent Variables												
Reported		Penalty		C/I/B	Section penalty imposed on	# Infos per section	# Infos penalties imposed on	Date	Court	City	Judge	Intent		Negligence	
		Aggregate	Per Charge									Y/N	■	Y/N	■
U(P)	202/Difarn (Dutch Deliveries)	$3,000.00	$3,000.00	I	22(1)	1	3	3/22/94	DC	Auck	Rushton	3	-3	N	0
			0 suspended			1									
			0 suspended			1									
U(P)	111/Difarn (Velvet Bear)	$6,500.00	$2,000.00	I	22(1)	2	7	12/7/93	DC	Chch	Erber	3	-3	N	0
			$500.00			5									
U(P)	449/Enerco	$13,500.00	$2,000.00	C	13(g)	5	18	12/18/97	DC	Auck	Kerr	N	1	2	-2
			$1,750.00			2									
			$0.00			11									
U(NP)F	70/Foodtown	$2,500.00	$2,500.00	C	13(g)	1	1	8/21/90	DC	Auck	Kerr	N	2	1	-3
U(NP)F	103/Grant Johnson Motors	$1,500.00	$1,500.00	C	13(a)	1	1	1/24/92	DC	Henderson	Ruston	2	-3	N	0
U(W)(P)	96/Harbour Inn	$2,700.00	$900.00	C	13(a)	1	2	6/17/91	DC	Wgtn	Kean	1	2	2	-1
			$1,800.00		10	1									
U(W)F	126/Harcourts	$2,650.00	$650.00	I	14(1)(b)	1	2	11/3/92	DC	Chch	Holderness	N	2	2	-3
			$2,000.00	C		1									
U(W)(P)	235/Kleins	$6,000.00	$2,000.00	C	13(g)	3	3	2/16/96	DC	Auck	Boshier	N	0	3	-3
U(P)	478/Johnson & Johnson	$9,000.00	$9,000.00	C	13(g)	1	1	4/1/89	DC	Auck	Roderick Joyce	N	0	1	0
U(W)(P)	172/Macaulay	$50,000.00	$5,000.00	C	21(b)	1	4	6/9/95	DC	Invercargill	Moran	2	-3	N	0
			$7,500.00		21(b)	1									
			$22,500.00		13(d)	1									
			$15,000.00		13(a)	1									
U(NP)F	16/HW St George	$750.00	$500.00	I	11	1	2	10/19/88	DC	New Plymouth	Dalmer	2	-3	N	0
			$250.00		13(e)	1									
R(W)(P)	175/Megavitamins	$13,750.00	$1,250.00	C	13(a)	10	11	3/25/94	DC	Chch	Green	N	2	3	-3
				I		1									
U(P)	469/NZ Office Products	$5,000.00	$2,500.00	C	13(g)	2	2	12/10/97	DC	Auck	Lance	N	2	1	2
R(W)U(P)	238/Noel Leeming	$19,000.00	$5,000.00	C	13(g)	2	6	2/28/96	DC	Chch	Noble	3	-2	1	-1
			$2,000.00		13(f)	2									
			$2,500.00		13(g)	2									
U(P)	325/Pacific Telephones	$7,500.00	$0.00	C	19(2)	1	4	6/24/96	DC	Chch	Somerville	3	-2	N	0
			$2,500.00		13(g)	3									
(U)(W)(P)	91/Collier	$11,050.00	$850.00	C	13(g)	10	13	4/18/91	DC	Auck	Morris	N	0	2	-2
					13(l)	3									
F	184/Rangi Savage	$500.00	$500.00	I	13(l)	1	1	5/18/92	DC	Wgtn	Evans	2	0	N	0
U(W)(P)	441/Wright	$15,000.00	$0.00	I	24	1	2	8/28/97	DC	Henderson	Robinson	3	-2	N	0
			$15,000.00			1									
F	26/Warwick (scott electronics)	$600.00	$200.00	I	10	1	3	4/28/89	DC	Auck	Gilbert	N	2	N	2
					13(e)	2									
(U)(W)(P)	193/Sweetline	$0.00	$0.00	C	10	1	1	4/22/93	DC	Palmerston North	Ryan	N	2	2	-2
(U)(W)(P)	25/Toy Warehouse	$500.00	$250.00	C	13(g)	2	2	4/10/89	DC	Chch	Hobbs	N	3	2	-1
U(P)	197/Village	$2,500.00	$1,500.00	C	13(a)	1	2	11/18/93	DC	Dunedin	Everitt	1	-2	2	-2
			$1,000.00			1									
U(NP)	95/Truebridge	$3,000.00	$1,000.00	I	14(1)	3	3	8/14/91	DC	Levin	Carruthers	N	1	1	1
F	120/Aldaman and Cooper	$5,300.00	$300.00	C	13(c)	17	19	6/10/92	DC	Henderson	Rushton		0	N	0
			$100.00	C	13(b)	1									
			$100.00	I	13(b)	1									
U(W)F	209/Woolworths	$8,500.00	$8,500.00	C	29(4)	1	1	7/8/94	DC	Auck	Morris	N	0	2	0
F	117/Richard waron (Kirby distributor)	$0.00	$0.00	I	13(l)	3	0	5/29/92	DC	Tauranga	Kearney	N	0	2	0
R(W)(P)	68/Chalmers	$0.00	$0.00	I	22(2)(b)	8	0	7/6/90	DC	Palmerston North	Inglis	N	1	N	0
U(W)(P)	124/Jason Victor Steele	$5,700.00	$600.00	I	22(2)(b)	5	14	10/6/92	DC	Chch	Erber	N	0	3	-2
			$300.00			9								1	0
R(W)(P)	125/Steele	$3,350.00	$400.00	I	22(2)(b)	5	14	12/17/92	HC	Chch	Tipping	N	0	3	-2
			$150.00			9								1	0
U(W)(P)	485/PKL	$2,500.00	$2,500.00	I	13(C)	1	3	12/22/97	DC	Auck	Cadenhead	2	0	N	0
			$0.00	C		2									
U(P)	422/Quantas	$8,000.00	$8,000.00	C	11	1	1	12/19/96	DC	Auck	Ruston	N	2	1	1
U(W)(P)	451/Zennith	$130,000.00	$5,000.00	C	13(c)	22	24	5/5/98	DC	North Shore	Gittos	3	-3	N	0
			$10,000.00	I		2									
U(W)(P)	438/Kearney	$20,000.00	$2,000.00	I	13(g)	6	11		DC	Chch	Abbott	2	-2	N	0
			$1,500.00	I	13(g)	4									
			$2,000.00	I	13(l)	1									
			$0.00	C	"	11									
U(W)(P)	106-108/Brian Kennedy	$14,100.00	$2,300.00	C	13(d)	1	7	1/29/92	DC	Henderson	Imrie	N	0	3	-2
			$800.00		13(g)	1									-2
			$3,200.00		13(d)	1									-2
			$800.00		13(a)	1									-2
			$4,500.00		13(d)	1									-3
			$800.00		13(a)	1									-2
			$1,700.00		13(a)	1									-2

FTA Cases Cont.	Independent Variables Cont.																									
	Consumer Prejudice								Producer Prejudice		Efforts to Correct Breach		Deterrence	Incidental Profit		Ability to Pay		Guilty Plea		Previous Offences		Co-operation with Commission		Degree of Dissemination	
	Freedom of Choic		Cost/ Financial		Safety		Harm																			
	Y/N	■	Y/N	■	Y/N	■	Y/N	■	Y/N	■	Y/N	■	■	Y/N	■	Y/N	■	Y/N	■	#/Type	■	Y/N	■	Y/N	■
202/Difarn (Dutch Deliveries)	3	0	2b	0	N	0	N	0	N	0	N	0	-2	Y(2)	-2	?(1)	3	Y	-1	Y	-2	N	0	2	0
111/Difarn (Velvet Bear)		0		0	N	0	N	0	N	0	N	0	-2	Y(2)	-1	1	3	Y	0	Y	-1		0		0
449/Enerco	2b	-1	2a	0	N	0	N	0	2	-1		0	-2	N	0	3	0	Y	1	0	1		0	3	-2
70/Foodtown	2b	-2	1	0	N	0	N	0	1	0	N	0	npliance effort	1	0	3	0	Y	0		0		0	2	0
103/Grant Johnson Motors	2a	0	2a	0	2a	0	N	0	1	0	N	0	0	1	0	2	0	Y	1		0	2	1	1	0
96/Harbour Inn	2a	-1	2b	2	N	0	N	0	1	1	N	0	0	1	0	2	0	N	0	N	0	2	0	2	0
126/Harcourts	2a	0	2a	-2	N	0	N	0	N	2	N	0	0	2	0	2	0	N	0	N	2	2	0	1	0
235/Kleins	3	-3	N	0	N	0	N	0	1	0	N	0	-2	2	0	3	0	N	0	1	2	2	2	3	-2
478/Johnson & Johnson	2b	0	N	0	N	0	N	0	N	0	2	0	0	N	0	3	0	Y	2	1	0	2	2	3	-1
172/Macaulay	2a	-2	2a	0	N	0	N	0	2	-1	3	-1	-3	2	-1	1	0	N	1	0	1	2	1	1	0
16/HW St George	2a	-2	1	-1	N	0	N	0	N	1	2	1	-3	N	2	N	27 CJA)	Y	1	N	0	N	0	2	0
175/Megavitamins	3	-3	2b	0	N	0	N	0	2	0	2	2	-2	N	0	1	2	N	0	1	-1		0	3	0
469/NZ Office Products	2b	2	N	0	N	0	N	0	2	0	3	3	-1	1	0	3	0	Y	3	1	2	3	3	3	0
238/Noel Leeming	3	-2		0	N	0	N	0	2	-1	2	1	-2	2	0	3	0	N	0	1	1	2	2	3	-3
																		Y	1						
																		N	0						
325/Pacific Telephones	3	-2	2a	-2	N	0	N	0	N	0		0	-1	2	0	3	0	Y	2	1	-2	2	1	3	-2
91/Collier	2a	0	0	1	N	0	N	0	2	0	1	2	-1	N	0	2	0	N	1	N	1	2	1	2	-2
184/Rangi Savage	3	0	2a	0	N	0	N	0	2	0	2	2	0	1	0		3	N	0		0		0	2	0
441/Wright	2b	0	2a	-1	N	0	N	0	N	0		0	0	3	-3	3	0	N	0	0	2	2	0	2	-3
26/Warwick (scott electronics)	2a	0		0		0	N	0	2	0		0	-2	1	0	1	3	Y	1		0		0		0
193/Sweetline	3	-1	N	0	N	0	N	0	3	0	3	2	3	2	0	3	0	N	1		0	2	2	3	0
25/Toy Warehouse	3	-1	N	2	N	2	N	0	2	0		0	0	2	0	3	0	Y	1		0		0	3	0
197/Village	2a	0	1	0	2a	0	N	0	1	2	2	2	-2	1	0	2	0	Y	1		0		0	1	0
95/Truebridge	1	1	0	0	N	0	N	0	2	0		0	0	N	0	2	0	Y	0	N	1	2	0	1	0
120/Aldaman and Cooper	2a	0	2a	0	N	0	N	0	2	0		0	0	2	0	1	2	Y	0	N	1		0	1	0
			0	3																					
			0	3																					
209/Woolworths	3	0	2b	0	3	-3	N	0	1	1		0	0	1	0	3	0	N	0	4	0	2	0	1	0
117/Richard waron (Kirby distributor)	2a	0	2a	0	N	0	N	0	N	0		0	-2	2	0	1	3	N	0	N	0		0	1	0
68/Chalmers	2a	1	2a	-2	N	1	N	0	N	0	3	2	-2	N	1	N	1	N	0	0	1	1	0	1	1
124/Jason Victor Steele	2a	0	1	1	N	0	N	0	N	0		0	0	1	0	1	2	N	0	N	2	3	2	2	2
125/Steele	2a	0	1	1	N	0	N	0	N	0		0	0	1	0	1	3	N	0	N	2	3	2	2	2
485/PKL	2a	0	2a	0	N	0	N	0	2	0		0	0	N	1	1	3	N	0		0		0	1	0
422/Quantas	3	0	0	0	N	0	N	0	N	0	2	0	0	N	0	3	0	Y	0		0		0	3	0
451/Zennith	2a	-3	0	0	N	0	N	0	2	-1	N	-1	-3	3	-2	3	0	N	0	N	0		0	1	2
438/Kearney	2a	0	2a	-3	N	2	N	0	N	0		0	-2		0	2	1	N	0	N	1		0	1	2
																0	3								
106-108/Brian Kennedy	2a	-2	2a	0	N	0	N	0	1	0	N	-1	0	N	0	2	0	N	0	0	0		0	1	0
	2a	2	2a	0							N	-1												1	0
	2a	-3	2a	0							3	2												1	0
	2a	-1	2a	0							3	2												1	0
	2a	-2	2a	0							3	2												1	0
	2a	-1	2a	0							3	2												1	0
	2a	-2	0	0							1	1												2	-2

FTA Cases Cont.	*Independent Variables Cont.*																			
	Market			**Penalty submissions relied on**	**Influence of Others**		**Pre-sentencing Prejudicial Behaviour**		**Public Status**		**Other Sanctions**		**Origin of Complaint**		**Extent of departure from truth**		**Extent of breach**		**Max**
		share	■	Y/N	Y/N	■	Y/N	■	Y/N	■	Y/N What?	■	CC/ Cust/ Trader	■	Y/N	■	Y/N	■	
202/Difarn (Dutch Deliveries)	Piecemeal candles	1		N	N	-1	N	0	N	0	Y/suspended sentence and other breaches	(2)	C	0	3	-1			
111/Difarn (Velvet Bear)	Piecemeal work/toys	1			N	0	N	0	N	0	N	0	0	0	2	-2			
449/Enerco	Enerco Gas	2		Y	N	0	N	0	3	-2	N	0	CC	0	2	1			
70/Foodtown	Supermarket	2			N	0	N	0	3	1	N	0	C	0	2	0			
103/Grant Johnson Motors	Car retail	1		Y	N	0	N	0	1	0	Y/compensation in exchange in W	2	C	0	3	-2			
96/Harbour Inn	Fish retail	1			N	0	N	0	2	0	N	0	C	0	3	-2			
126/Harcourts	Real estate	2		0	N	0	N	0	3	0	N	0	C	0	3	0			
235/Kleins	Cheap jewellery	2		N	N	0	N	0	3	0	N	0	C	0	2	-2			Y
478/Johnson & Johnson	Pharmaceuticals	3		Y	N	0	N	0	3	-2	N	0	CC	0	2	0			N
172/Macaulay	Car sales	1		Y	N	0	N	0	1	0	N	0	C	0	3	-1			Y
16/HW St George	Advertise lotto scam	1		Y	N	0	N	0	N	0	N	0	C	0	3	-3			
175/Megavitamins	Vitamins	2		Y	N	0	N	0	2	0	N	0	CC?	0	3	-2	3	-1	Y
469/NZ Office Products	Office products	2		Y	N	0	N	0	3	0	N	0	C	2	3	0	2	1	N
238/Noel Leeming	Appliances	2		Y	N	0	N	0	3	0	Wide media attention	0	C	0	3	-3	2	-1	N
																-1			
																-1			
325/Pacific Telephones	Cellphones	2		Y	N	0	N	0	3	-2	N	0	CC	0	2	-3	3	0	Y
91/Collier	Door to door sales (encyclopaedias)	1		Y	N	0	N	0	0	0	N	0	C	0	3	3	3	0	N
184/Rangi Savage	Door to door (vacuums)	1			N	0	N	0	1	0	N	0	C	0	3	0	3	-1	Y
441/Wright	Pyramid Selling	1			N	0	N	0	2	-1	N	0	C	0	N	0	3	0	Y
26/Warwick (scott electronics)	Electronics	1				0	N	0	1	2	N	0		0	3	1	1	-1	Y
193/Sweetline	Confectionary distributor	2		N	N	0	N	0	3	-1	N	0	C	0	1	1	2	0	N
25/Toy Warehouse	Toys/carseats	2		N	N	0	N	0	3	0	N	0	C	0	2	0	1	2	N
197/Village	Butchery	1		Y	N	0	N	0	1	-1	N	0	T	0	3	-1	1	-1	Y
																-1			
95/Truebridge	Real Estate	1			N	0	N	0	2	2	N	0	C	0	3	-2	0	1	Y
120/Aldaman and Cooper	Avertising advertising space	1		N	Y	3	N	0	1	0	Co'y paid Cox's fine	0	1	C	0	3	-2	3	0	N
209/Woolworths	Retail	2		N	Y	2	N	0	3	0	Recall $10500/adverse publicity	2	C	0	2	0	0	0	N
117/Richard waron (Kirby distributor)	Door to door	1		N	Y	3	N	0	2	0	N	0		0	3	0	2	0	N
68/Chalmers	Videohire franchise	3		Y	Y	3	ber to sue	2	1	1	Effort to repay	1	C	0	3	0	1	1	N
124/Jason Victor Steele	Lawnmowing/computer franchises	1		Y	N	0	N	0	1	0	N	0	C	0	1	0	2	0	N
															3				
125/Steele	Lawnmowing/computer franchises	1		Y	N	0	N	0	1	0	N	0	C	0	1	0	2	0	Y
															3				
485/PKL	Advertising	1		N	N	0	N	0	0	0	N	0	C	0	3	-2	1	0	N
422/Quantas	Airline	3		N	N	0	N	0	3	0	N	0	C	0	1	2	2	0	Y
451/Zennith	Advertising	1		Y	Y	3	N	0	1	0	N	0	C	0	3	-2	3	0	Y
					N	0													
438/Kearney	Finance	1[2]		Y	If mind	1	N	0	2	0	Adverse publicity	1	C	0	2	0	3	0	Y
106-108/Brian Kennedy	Car retail	1		Y	N	0	N	0	1	0	Y/s 43 compensation total 2690 + adverse publicity	2[$2000]	C	0	3	0	1	0	N
												2[$2000]							
												0							
												0							
												0							
												0							
												0							

APPENDIX F: SHAZAM RESULTS

See Appendix C for variable abbreviations. (Nb. In the following regressions "c" refers to CPI, not Section.)

```
UNIT  6 IS NOW ASSIGNED TO: equationtests1
|_file input equationtestcommand3
UNIT  5 IS NOW ASSIGNED TO: equationtestcommand3
|_sample 1 84
|_read (g2) a b d e c f g i id j k l m n o p r s t u v w x yy z aa ac ad af ag
UNIT 88 IS NOW ASSIGNED TO: g2
30 VARIABLES AND 84 OBSERVATIONS STARTING AT OBS 1
```

UNRESTRICTED REGRESSION USED IN STUDY

Tobit regression on *all* the variables collected with the first data collection technique. (See Appendix B for explanation and exceptions.)

|_tobit a b d e c f g i j k l m o p r s t u v w x yy z aa ac ad af ag

```
TOBIT ANALYSIS, LIMIT = .00     25 MAX ITERATIONS
      4 LIMIT OBSERVATIONS
     80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS =  4

DEPENDENT VARIABLE =  A
VARIANCE OF THE ESTIMATE =  0.13712E+09
STANDARD ERROR OF THE ESTIMATE =  11710.
```

VARIABLE	NORMALIZED COEFFICIENT	ASYMPTOTIC STANDARD ERROR	T-RATIO	REGRESSION COEFFICIENT	ELASTICITY OF INDEX	ELASTICITY OF E(Y)
B	.29532	.31666	.93261	3458.2	.2360	.1766
D	0.80892E-01	0.26381E-01	3.0662	947.24	.4309	.3225
E	.36496	.26814	1.3611	4273.7	813.5549	608.8858
C	-0.64148E-02	0.99076E-02	-.64747	-75.118	-7.0158	-5.2508
F	-.42214	.46661	-.90469	-4943.2	-.0506	-.0379
G	.35204	.30553	1.1522	4122.3	.2532	.1895
I	.46678	.17773	2.6264	5466.0	.4538	.3396
J	.17280	.17807	.97039	2023.5	.1772	.1326
K	0.78793E-01	.23979	.32859	922.67	.1773	.1327
L	-.38899	.20112	-1.9341	-4555.1	-.4766	-.3567
M	0.57213E-01	.26455	.21627	669.97	.0130	.0097
O	-0.40458E-01	.19496	-.20752	-473.76	-.0436	-.0327
P	0.96986E-01	.16805	.57714	1135.7	.1059	.0793
R	.21743	.16369	1.3283	2546.1	.2751	.2059
S	.27929	.28999	.96311	3270.5	.1265	.0947
T	.25901	.21108	1.2270	3032.9	.4898	.3666
U	-.18632	.26556	-.70161	-2181.8	-.1166	-.0873
V	-.85880	.40226	-2.1349	-10057.	-.1830	-.1370
W	-.21759	.14934	-1.4570	-2548.0	-.2115	-.1583
X	-.17417	.19975	-.87194	-2039.5	-.3317	-.2483
YY	-0.91969E-01	.41270	-.22285	-1077.0	-.1470	-.1100
Z	.32388	.33107	.97829	3792.6	.2114	.1582

```
AA        .28944      .29694      .97474      3389.4       .1079    .0808
AC      -0.25726E-01   .25035     -.10276     -301.25      -.0483   -.0362
AD       -.16704      .31498     -.53032     -1956.1      -.0512   -.0383
AF        .24063      .22129      1.0874      2817.8       .6634    .4965
AG      -0.96050E-01   .13079     -.73441     -1124.7      -.1535   -.1149
CONSTANT  -721.80      524.80     -1.3754     -0.84523E+07
A        0.85397E-04  0.67588E-05   12.635

THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) =  .8013
THE OBSERVED FREQUENCY OF Y > LIMIT IS =  .9524
AT MEAN VALUES OF ALL X(I), E(Y) =  11207.0781

LOG-LIKELIHOOD FUNCTION= -865.30951
MEAN-SQUARE ERROR= 0.11969258E+09
MEAN ERROR=  2419.1570
SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES=   .66315
```

Test for joint significance of the unrestricted model

```
|_test
|_test b/a=d/a
|_test d/a=e/a
|_test e/a=c/a
|_test c/a=f/a
|_test f/a=g/a
|_test g/a=i/a
|_test i/a=j/a
|_test j/a=k/a
|_test k/a=l/a
|_test l/a=m/a
|_test m/a=o/a
|_test o/a=p/a
|_test p/a=r/a
|_test r/a=s/a
|_test s/a=t/a
|_test t/a=u/a
|_test u/a=v/a
|_test v/a=w/a
|_test w/a=x/a
|_test x/a=yy/a
|_test yy/a=z/a
|_test z/a=aa/a
|_test aa/a=ac/a
|_test ac/a=ad/a
|_test ad/a=af/a
|_test af/a=ag/a
|_test ag/a=0
|_end

WALD CHI-SQUARE STATISTIC =   118.02700     WITH   27 D.F.  P-VALUE = 0.00000
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .22876
```

RESTRICTED REGRESSION USED IN STUDY

Tobit regression on *only* those variables which approximate Garoupa's "optimal considerations", and which are required for the purpose of joint (statistical) significance. No *linear* restrictions are included.

|_tobit a b d c i k l m o p r t u v w / list

TOBIT ANALYSIS, LIMIT = .00 25 MAX ITERATIONS
4 LIMIT OBSERVATIONS
80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS = 4

DEPENDENT VARIABLE = A
VARIANCE OF THE ESTIMATE = 0.16657E+09
STANDARD ERROR OF THE ESTIMATE = 12906.

VARIABLE	NORMALIZED COEFFICIENT	ASYMPTOTIC STANDARD ERROR	T-RATIO	REGRESSION COEFFICIENT	ELASTICITY OF INDEX	ELASTICITY OF E(Y)
B	.43691	.29749	1.4686	5638.9	.3848	.2715
D	0.85803E-01	0.22528E-01	3.8088	1107.4	.5038	.3554
C	0.58322E-02	0.18577E-02	3.1395	75.272	7.0302	4.9600
I	.46504	.13040	3.5663	6002.0	.4983	.3516
K	0.88683E-02	.16517	0.53690E-01	114.46	.0220	.0155
L	-.25299	.16101	-1.5713	-3265.2	-.3417	-.2410
M	.13767	.20256	.67967	1776.8	.0344	.0242
O	-0.94865E-02	.14417	-0.65799E-01	-122.44	-.0113	-.0080
P	.21011	.12809	1.6403	2711.7	.2529	.1784
R	.16456	.14721	1.1179	2123.9	.2295	.1619
T	.32406	.16695	1.9411	4182.4	.6755	.4766
U	-.18380	.24384	-.75379	-2372.2	-.1268	-.0895
V	-.82863	.35586	-2.3285	-10695.	-.1946	-.1373
W	-.23220	.12996	-1.7867	-2996.8	-.2488	-.1755
CONSTANT	-6.2943	1.7993	-3.4982	-81237.		
A	0.77482E-04	0.61295E-05	12.641			

THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) = .7788
THE OBSERVED FREQUENCY OF Y > LIMIT IS = .9524
AT MEAN VALUES OF ALL X(I), E(Y) = 11554.3757

OB	INDEX	PROB(X)	DEPENDENT VARIABLE DENSITY(X)	OBSERVED	EXPECTED	CONDITIONAL
1	-.28576	.38753	.38298	.00000	3513.6	------
2	1.4501	.92649	.13941	.00000	19139.	------
3	-.42554	.33522	.36441	.00000	2862.1	------
4	-.97221	.16547	.24869	.00000	1133.4	------
5	-.35307	.36202	.37484	100.00	3188.1	8806.4
6	.34693	.63568	.37564	200.00	7694.4	12104.
7	-.29243	.38498	.38224	400.00	3480.4	9040.4
8	-.17272	.43144	.39304	500.00	4110.9	9528.4
9	-.52125	.30110	.34827	500.00	2469.2	8200.8
10	.51184	.69562	.34996	500.00	9111.9	13099.
11	.49581	.68998	.35280	500.00	8968.6	12998.
12	.43176	.66704	.36344	600.00	8407.7	12604.

13	0.69294E-01	.52762	.39799	600.00	5608.4	10630.
14	-.28391	.38824	.38318	600.00	3522.9	9074.0
15	-.67685	.24925	.31727	600.00	1917.4	7692.7
16	-.63558	.26252	.32598	750.00	2053.7	7822.9
17	-.32746	.37166	.37812	750.00	3309.3	8904.2
18	-.15840	.43707	.39397	1000.0	4191.1	9589.2
19	1.2982	.90289	.17177	1000.0	17345.	19210.
20	.21543	.58528	.38979	1500.0	6658.1	11376.
21	.12954	.55154	.39561	1500.0	6027.9	10929.
22	.80442	.78942	.28867	1500.0	11921.	15101.
23	-0.25567E-01	.48980	.39881	2000.0	4985.6	10179.
24	.18301	.57261	.39232	2000.0	6415.9	11205.
25	.54477	.70705	.34393	2500.0	9410.1	13309.
26	.34883	.63639	.37539	2500.0	7710.0	12115.
27	1.6153	.94687	.10823	2500.0	21136.	22322.
28	1.4573	.92748	.13796	2500.0	19225.	20728.
29	0.42646E-01	.51701	.39858	2650.0	5428.7	10500.
30	.28698	.61294	.38285	2700.0	7211.4	11765.
31	.38828	.65110	.36998	2750.0	8037.8	12345.
32	.45852	.67671	.35913	3000.0	8639.8	12767.
33	.40585	.65757	.36740	3000.0	8186.2	12449.
34	.35175	.63749	.37501	3000.0	7734.0	12132.
35	-.38990	.34830	.36974	3000.0	3019.3	8668.4
36	.16755	.56653	.39338	3350.0	6302.2	11124.
37	1.3337	.90885	.16393	3500.0	17760.	19541.
38	-.21522	.41480	.38981	3500.0	3878.8	9351.1
39	1.1990	.88473	.19443	3900.0	16200.	18310.
40	.40953	.65892	.36685	4000.0	8217.4	12471.
41	1.0980	.86390	.21833	4800.0	15060.	17433.
42	1.3405	.90996	.16245	4900.0	17839.	19605.
43	.69950	.75788	.31236	5000.0	10874.	14347.
44	.63013	.73570	.32711	5000.0	10205.	13871.
45	.68140	.75219	.31629	5000.0	10697.	14221.
46	1.4389	.92490	.14169	5300.0	19004.	20548.
47	.16755	.56653	.39338	5700.0	6302.2	11124.
48	.77578	.78106	.29527	6000.0	11631.	14892.
49	.62498	.73401	.32816	6000.0	10156.	13836.
50	1.0985	.86401	.21821	6500.0	15066.	17437.
51	1.5004	.93325	.12944	7200.0	19743.	21155.
52	1.5004	.93325	.12944	7200.0	19743.	21155.
53	.29874	.61743	.38153	7500.0	7304.7	11831.
54	1.4256	.92301	.14441	7500.0	18847.	20419.
55	.55582	.71083	.34184	8000.0	9511.1	13380.
56	.33761	.63217	.37684	8000.0	7618.2	12051.
57	1.6632	.95186	.10006	8000.0	21723.	22822.
58	-.17159	.43188	.39311	8500.0	4117.2	9533.2
59	-.78183	.21716	.29389	9000.0	1601.7	7375.9
60	.62470	.73391	.32822	10000.	10153.	13834.
61	.62470	.73391	.32822	10000.	10153.	13834.
62	2.7076	.99661	0.10208E-01	10800.	34959.	35078.
63	1.3078	.90453	.16963	11050.	17457.	19299.
64	.75784	.77573	.29936	13000.	11451.	14762.
65	2.2786	.98865	0.29750E-01	13500.	29458.	29796.
66	.33587	.63151	.37706	13750.	7604.0	12041.
67	.59744	.72489	.33374	14100.	9896.7	13653.
68	1.2091	.88668	.19208	15000.	16315.	18400.

69	2.0960	.98196	0.44351E-01	15000.	27136.	27635.
70	1.3359	.90921	.16344	16000.	17786.	19562.
71	2.6882	.99641	0.10756E-01	19000.	34709.	34835.
72	2.1615	.98467	0.38585E-01	20000.	27967.	28402.
73	0.58463E-02	.50233	.39894	20000.	5186.7	10325.
74	2.5684	.99489	0.14738E-01	20000.	33170.	33340.
75	2.1116	.98264	0.42925E-01	23000.	27333.	27816.
76	.45732	.67628	.35933	25000.	8629.2	12760.
77	.31873	.62503	.37918	26000.	7465.0	11943.
78	.31873	.62503	.37918	26000.	7465.0	11943.
79	1.6308	.94853	.10554	28000.	21326.	22483.
80	2.1507	.98425	0.39492E-01	46500.	27830.	28275.
81	2.6851	.99637	0.10848E-01	50000.	34669.	34795.
82	1.7932	.96353	0.79917E-01	50000.	23331.	24214.
83	2.2112	.98649	0.34608E-01	63000.	28600.	28991.
84	5.4537	1.0000	0.13881E-06	0.13000E+06	70387.	70387.

Test for joint significance of the restricted model

```
|_test
|_test b/a=d/a
|_test d/a=c/a
|_test c/a=i/a
|_test i/a=k/a
|_test k/a=l/a
|_test l/a=m/a
|_test m/a=o/a
|_test o/a=p/a
|_test p/a=r/a
|_test r/a=t/a
|_test t/a=u/a
|_test u/a=v/a
|_test v/a=w/a
|_test w/a=0
|_end

WALD CHI-SQUARE STATISTIC =   46.390500   WITH   14 D.F.  P-VALUE =  .00002
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .30179
```

LINEAR RESTRICTIONS

See Appendix D for linear restrictions.

```
|_test r/a = -p/a
TEST VALUE =  3681.8     STD. ERROR OF TEST VALUE   2635.9
ASYMPTOTIC NORMAL STATISTIC =  1.3968200      P-VALUE=  .08123
WALD CHI-SQUARE STATISTIC =  1.9511061     WITH  1 D.F.  P-VALUE=  .16247
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .51253
|_test (i/a)*(r/a)=-p/a
TEST VALUE =  0.13918E+08 STD. ERROR OF TEST VALUE  0.10147E+08
ASYMPTOTIC NORMAL STATISTIC =  1.3716434      P-VALUE =  .08509
WALD CHI-SQUARE STATISTIC =  1.8814060     WITH  1 D.F.  P-VALUE =  .17017
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .53152
|_test
|_test k/a =l/a
|_test l/a=m/a
|_test m/a=o/a
|_end
WALD CHI-SQUARE STATISTIC =  3.6365980     WITH  3 D.F.  P-VALUE =  .30347
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .82495
|_test
|_test x/a=-k/a
|_test k/a=l/a
|_test l/a=m/a
|_test m/a=-o/a
|_end
WALD CHI-SQUARE STATISTIC =  5.6015691     WITH  4 D.F.  P-VALUE =  .23094
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .71409
|_test
|_test d/a=e/a
|_test e/a=f/a
|_test f/a=g/a
|_test g/a=j/a
|_test j/a=s/a
|_test s/a=t/a
|_test t/a=v/a
|_test v/a=x/a
|_test x/a=yy/a
|_test yy/a=z/a
|_test z/a=aa/a
|_test aa/a=ac/a
|_test ac/a=ad/a
|_test ad/a=af/a
|_test af/a=ag/a
|_test ag/a=0
|_end
WALD CHI-SQUARE STATISTIC =  48.655323     WITH  16 D.F.  P-VALUE =  .00004
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .32884
|_test
|_test e/a=f/a
|_test f/a=j/a
|_test j/a=s/a
|_test s/a=t/a
|_test t/a=x/a
|_test x/a=yy/a
```

```
|_test yy/a=z/a
|_test z/a=aa/a
|_test aa/a=ac/a
|_test ac/a=ad/a
|_test ad/a=af/a
|_test af/a=ag/a
|_test ag/a=0
|_end
WALD CHI-SQUARE STATISTIC =  18.429372     WITH  13 D.F.  P-VALUE =  .14189
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .70540
|_test
|_test e/a=f/a
|_test f/a=g/a
|_test g/a=j/a
|_test j/a=s/a
|_test s/a=x/a
|_test x/a=yy/a
|_test yy/a=z/a
|_test z/a=aa/a
|_test aa/a=ac/a
|_test ac/a=ad/a
|_test ad/a=af/a
|_test af/a=ag/a
|_test ag/a=0
|_end
WALD CHI-SQUARE STATISTIC =  17.776014   WITH  13 D.F.  P-VALUE =  .16621
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .73132
|_test
|_test d/a=e/a
|_test e/a=f/a
|_test f/a=g/a
|_test g/a=j/a
|_test j/a=s/a
|_test s/a=x/a
|_test x/a=yy/a
|_test yy/a=z/a
|_test z/a=aa/a
|_test aa/a=ac/a
|_test ac/a=ad/a
|_test ad/a=af/a
|_test af/a=ag/a
|_test ag/a=0
|_end
WALD CHI-SQUARE STATISTIC =  36.659360   WITH   14 D.F.  P-VALUE =  .00083
UPPER BOUND ON P-VALUE BY CHEBYCHEV INEQUALITY =  .38189
```

```
|_genr intbenef = i*r
|_genr benefit = intbenef-p
|_genr harm = k+l+m+o
|_genr actbenef = r-p
|_genr posharm = x-k-l-m+o
```

Tobit regressions on *only* those variables which approximate Garoupa's "optimal considerations", and which are required for the purpose of joint (statistical) significance, *with* valid linear restrictions.

|_tobit a b d c benefit harm t u v w

```
TOBIT ANALYSIS, LIMIT= .00     25 MAX ITERATIONS
       4 LIMIT OBSERVATIONS
      80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS = 3

DEPENDENT VARIABLE = A
VARIANCE OF THE ESTIMATE =  0.20017E+09
STANDARD ERROR OF THE ESTIMATE =  14148.

                        ASYMPTOTIC
VARIABLE  NORMALIZED    STANDARD   T-RATIO    REGRESSION ELASTICITY ELASTICITY
        COEFFICIENT      ERROR              COEFFICIENT  OF INDEX   OF E(Y)
B         .50364       .29842       1.6877       7125.7        .4863    .3241
D        0.67426E-01  0.21554E-01   3.1282       953.96        .4340    .2893
C        0.44087E-02  0.16466E-02   2.6775       62.376        5.8258   3.8831
BENEFIT    .12135      0.44093E-01   2.7522       1716.9        .0742    .0495
HARM      0.17821E-01  0.66799E-01   .26679       252.14        .1029    .0686
T         .39052       .15492       2.5208       5525.2        .8923    .5948
U        0.46141E-01   .23488       .19644       652.82        .0349    .0233
V         -.55644      .32387      -1.7181      -7872.7       -.1433   -.0955
W         -.16964      .12638      -1.3422      -2400.1       -.1993   -.1328
CONSTANT  -4.8582      1.6204      -2.9981      -68735.
A        0.70680E-04  0.55888E-05   12.647

THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) =  .7569
THE OBSERVED FREQUENCY OF Y > LIMIT IS =  .9524
AT MEAN VALUES OF ALL X(I), E(Y) =   11885.9964

LOG-LIKELIHOOD FUNCTION = -880.66608
MEAN-SQUARE ERROR = 0.18493063E+09
MEAN ERROR =  2668.9000
SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES =  .46362
```

|_tobit a b d c actbenef harm t u v w

```
TOBIT ANALYSIS, LIMIT = .00     25 MAX ITERATIONS
       4 LIMIT OBSERVATIONS
      80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS =  3

DEPENDENT VARIABLE = A
VARIANCE OF THE ESTIMATE =  0.21847E+09
STANDARD ERROR OF THE ESTIMATE =  14781.
```

```
                    ASYMPTOTIC
VARIABLE  NORMALIZED    STANDARD   T-RATIO    REGRESSION ELASTICITY ELASTICITY
       COEFFICIENT      ERROR              COEFFICIENT  OF INDEX   OF E(Y)
B         .23594       .28765       .82022       3487.4        .2380    .1538
D        0.76670E-01  0.21715E-01   3.5308        1133.2        .5155    .3333
C        0.51312E-02  0.16255E-02   3.1567        75.843        7.0836   4.5792
ACTBENEF 0.55657E-02  0.75911E-01  0.73318E-01    82.265        .0012    .0008
HARM      0.37044E-01  0.66558E-01   .55656        547.53        .2236    .1445
T         .38690       .15496       2.4967        5718.7        .9236    .5970
U        -0.49060E-01   .23712      -.20690       -725.15       -.0388   -.0251
V         -.42476       .32014      -1.3268       -6278.3       -.1142   -.0739
W         -.21101       .12593      -1.6756       -3118.9       -.2590   -.1674
CONSTANT  -5.4021       1.6062      -3.3634       -79847.
A        0.67656E-04  0.53569E-05   12.630

THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) =  .7484
THE OBSERVED FREQUENCY OF Y > LIMIT IS =  .9524
AT MEAN VALUES OF ALL X(I), E(Y) =   12117.6063

LOG-LIKELIHOOD FUNCTION = -884.46099
MEAN-SQUARE ERROR = 0.20646280E+09
MEAN ERROR =  2713.0339
SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES =   .38998

|_tobit a b d c benefit posharm t u v w

TOBIT ANALYSIS, LIMIT =  .00     25 MAX ITERATIONS
      4 LIMIT OBSERVATIONS
     80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS =  3

DEPENDENT VARIABLE = A
VARIANCE OF THE ESTIMATE =  0.19946E+09
STANDARD ERROR OF THE ESTIMATE =   14123.

                    ASYMPTOTIC
VARIABLE  NORMALIZED    STANDARD   T-RATIO    REGRESSION ELASTICITY ELASTICITY
       COEFFICIENT      ERROR              COEFFICIENT  OF INDEX   OF E(Y)
B         .52799       .29325       1.8005       7456.8        .5089    .3396
D        0.64874E-01  0.21874E-01   2.9659        916.22        .4168    .2782
C        0.43268E-02  0.16440E-02   2.6320        61.108        5.7074   3.8094
BENEFIT    .12987     0.45778E-01   2.8370        1834.2        .0793    .0529
POSHARM  0.32610E-01  0.58479E-01   .55764        460.55       -.0283   -.0189
T         .39307       .15269       2.5742        5551.3        .8965    .5984
U        0.40772E-01   .23403       .17422        575.82        .0308    .0205
V         -.55075       .32336      -1.7032       -7778.4       -.1415   -.0945
W         -.17362       .12633      -1.3744       -2452.1       -.2036   -.1359
CONSTANT  -4.6881       1.5884      -2.9515       -66211.
A        0.70806E-04  0.55999E-05   12.644

THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) =  .7572
THE OBSERVED FREQUENCY OF Y > LIMIT IS =  .9524
AT MEAN VALUES OF ALL X(I), E(Y) =   11873.7986
```

```
 LOG-LIKELIHOOD FUNCTION = -880.54618
 MEAN-SQUARE ERROR = 0.18420046E+09
 MEAN ERROR =  2658.4549
 SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES =  .46479

 |_tobit a b d c actbenef posharm t u v w

 TOBIT ANALYSIS, LIMIT = .00      25 MAX ITERATIONS
       4 LIMIT OBSERVATIONS
      80 NON-LIMIT OBSERVATIONS

NUMBER OF ITERATIONS =  3

 DEPENDENT VARIABLE = A
 VARIANCE OF THE ESTIMATE =  0.21898E+09
 STANDARD ERROR OF THE ESTIMATE =   14798.

                      ASYMPTOTIC
 VARIABLE  NORMALIZED    STANDARD   T-RATIO    REGRESSION ELASTICITY ELASTICITY
        COEFFICIENT      ERROR              COEFFICIENT  OF INDEX   OF E(Y)
 B         .26186      .28320      .92464      3875.0       .2644    .1708
 D        0.77157E-01  0.22187E-01  3.4776      1141.7       .5194    .3354
 C        0.50836E-02  0.16227E-02  3.1329      75.227       7.0260   4.5373
 ACTBENEF  0.54745E-03  0.80669E-01  0.67863E-02  8.1010       .0001    .0001
 POSHARM  -0.14288E-01  0.59528E-01  -.24002     -211.43       .0130    .0084
 T         .40474      .15319      2.6421      5989.3       .9673    .6247
 U        -0.63117E-01  .23613     -.26730     -933.99      -.0499   -.0322
 V         -.44816      .32122     -1.3952     -6631.8      -.1207   -.0779
 W         -.21391      .12581     -1.7003     -3165.4      -.2628   -.1697
 CONSTANT  -5.2421      1.5746     -3.3291     -77571.
 A         0.67578E-04  0.53517E-05  12.627

 THE PREDICTED PROBABILITY OF Y > LIMIT GIVEN AVERAGE X(I) =  .7483
 THE OBSERVED FREQUENCY OF Y > LIMIT IS =  .9524
 AT MEAN VALUES OF ALL X(I), E(Y) =   12128.6709

 LOG-LIKELIHOOD FUNCTION= -884.58719
 MEAN-SQUARE ERROR= 0.20710839E+09
 MEAN ERROR=  2710.3538
 SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES=   .38754

LOG-LIKELIHOOD FUNCTION= -873.41822
 MEAN-SQUARE ERROR= 0.15048700E+09
 MEAN ERROR=  2551.9376
 SQUARED CORRELATION BETWEEN OBSERVED AND EXPECTED VALUES=   .56685
 |_stop
```

BIBLIOGRAPHY

Acts of Parliament

The Australian Trade Practices Act 1974 (Aust).

The Commerce Act 1986 (NZ).

The Consumer Guarantees Act 1993 (NZ).

The Fair Trading Act 1986 (NZ).

Texts

Greene, William H. *Econometric Analysis* (3rd edition, Prentice-Hall Inc., New Jersey, 1993.)

Hill, Bernard, and Mark Jones *Fair Trading in New Zealand – The Fair Trading Act 1986* (Butterworths, Wellington, 1989.)

Maddala, G.S. *Limited-Dependent and Quantitative Variables in Econometrics* (Cambridge University Press, Cambridge, 1983.)

Journal Articles and Research Papers

Becker, Gary, "Crime and Punishment: An Economic Approach", *Journal of Political Economy*, Vol.76, 1968.

Duggan, A. J., "The Economics of Consumer Protection: A Critique of the Chicargo School Case Against Intervention", *Adelaide Law Review Research Paper*, 1982.

Evans, Lewis, Arthur Grimes, Bryce Wilkinson, and David Teece, "Economic Reform in New Zealand 1984 – 95: The Pursuit of Efficiency", *Journal of Economic Literature*, Vol.34, December 1996.

Frieberg, Arie, "Monetary Penalties Under the Trade Practices Act 1974", *Australian Business Law Review*, February 1983.

Garoupa, Nuno, "The Theory of Optimal Law Enforcement", *Journal of Economic Surveys*, Vol.11, 1997.

Hadfield, Gillian K., Robert Howse, and Michael J. Trebilcock, "Information-Based Principles for Rethinking Consumer Protection Policy", *Journal of Consumer Policy*, Vol.21, 1998.

Landes, William M., "Optimal Sanctions for Antitrust Violations", *University of Chicargo Law Review*, Vol.50, 1983.

Polinsky, A. Mitcahell, and Steven Shavell, "The Economic Theory of Public Enforcement of Law", *Journal of Economic Literature*, Vol.XXXVIII, No.1, March 2000.

Reports

Proposals for a Selling Practices Act: Report of the Ministerial Working Party Reviewing Certain Consumer and Commercial Legislation (Department of Trade and Industry, Wellington, July 1980.)

An Introduction to Competition Policy and the Government's Legislative Proposals in the Commerce Bill: Notes of Talk to Members of the Parliamentary Select Committee on Commerce and Marketing by Department of Trade and Industry Officials (Department of Trade and Industry, Wellington.)

The Commerce Bill 1985: A Background to the Bill and an Outline of its Provisions (Department of Trade and Industry, Wellington, August 1985.)

Fair Trading Bill 1985: Explanatory Booklet (Department of Trade and Industry, November 1985.)

Report of the Consumer Affairs Unit on the Establishment of a Ministry of Consumer Affairs and Related Polices; Synopsis of Public Consultation on Consumer Affairs (The Consumer Affairs Unit and The Department of Trade and Industry, Wellington, November 1985.)

Commerce Commission Publications

Commerce Commission Annual Report 1997 – 1998.

Investigation and Enforcement Criteria (Fair Trading Division, Commerce Commission, August 1998.)

Le Lievre, Estelle (ed.) *A Decade of Fair Trading in New Zealand: The Fair Trading Act 1987 – 1997* (Commerce Commission, Wellington, May 1997.)

Whiteside, Janet *A Review of the Commerce Commission Fair Trading Surveillance Programme* (Commerce Commission, October 1998.)

Specific Fair Trading Act Cases

Commerce Commission v Sean Wright (Black Magic), Unreported, DC, Henderson, 1997.

Commerce Commission v Bond and Bond, Unreported, DC, Wellington, 1997.

LD Nathans v Commerce Commission (1998) 3 TCLR 362.

Computer Programmes

Shazam - Econometrics Computer Programme, Version 6.2.